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AMERICAN ANTIQUITY

VOL. V JULY, 1939 NO. 1

EDITORIALS

A NEW YEAR brings with it new officers for the Society as well as a new volume of AMERICAN ANTIQUITY. It is a year particularly critical in the life of the journal for it passes into new hands. To Mr. McKern who has prescribed the formula that has brought the baby through the trying years of infancy is due not only credit, but also the heart-felt thanks of the Society. As a new Editor attempts timorously to take over his duties he realizes only too well the debt that the Society owes its first Editor who founded its editorial policies. Mr. McKern has made of AMERICAN ANTIQUITY a journal that is above all readable; while keeping the pages open to all who wish to contribute he has maintained a standard for contributions that holds the journal high in the rank of scientific publications. To follow his precepts will be a difficult task, but it will be made vastly more simple by a continuation of the fine cooperation that has helped in the building of our journal.

AMERICAN ANTIQUITY need not always be as small as the present number. Ample manuscript material is on hand. If every member were to secure one new member our difficulty would be solved.

In making his bow the new Editor has the great pleasure of presenting to the Society our new President, Mr. Neil M. Judd, Curator of Archaeology of the United States National Museum. In a later number we hope to hear from Mr. Glenn A. Black of the Indiana Historical Society, our new Vice-President. Our long-suffering Secretary-Treasurer, Dr. Carl E. Guthe, has consented to hold his position for another term. His is an exacting and a time consuming job, yet he has given freely of his time.

On behalf of the Society we congratulate these gentlemen on their election and promise them cooperation to the limit of our ability.

(D. S. B.)

A COMMON EFFORT. A new year begins for AMERICAN ANTIQUITY with this, the first number of Volume V. The Society for American Archaeology, which sponsors the journal, celebrated its anniversary

early in May. At that time new officers were elected for the year ensuing but the Society, like the journal, will continue with little outward change.

It is well that leadership be superseded at regular intervals. Ours is a democratic organization, thriving in a democratic country. Our officers represent us for a time; they are our chosen spokesmen. They have nothing to sell; no dogmas to force upon us. They are selected from among the membership and return to that level when their term of office ends.

During the past four years the Society for American Archaeology has been singularly fortunate in its choice of leaders. There have been four presidents, four vice-presidents. But throughout those four years Dr. Guthe has continued to serve as secretary-treasurer; Mr. McKern has remained at the editor's desk. To these latter two belong the major credit for the success of the Society and its journal. Theirs has been the hard work. Chiefly through their efforts and their devotion to our common cause, the Society's membership has risen from 344 to 783; the journal's pages have been increased by 18 per cent. We do not need to remind these two how completely the Society appreciates their endeavors since the esteem in which both are generally held is ample evidence.

Happily, Dr. Guthe retains the secretaryship for another year while Mr. McKern, deserving of a well-earned rest from blue pencils and galley sheets, relinquishes the editorship to the capable hands of Mr. Byers. The latter is challenged to see that the high standard of editorial work found in the first four volumes is maintained and the membership at large is challenged to see that there is no decrease, either in quality or diversity of subject matter, in those articles submitted for publication. Our editor gives generously of hours he would otherwise devote to his own researches; he merits, and I am sure will receive, the loyal support of his fellow members.

The Society is composed of those professionally engaged in archaeology and those who have adopted the science as an avocation. But we are all students together; each may learn from the other. With a common cause our united efforts should place the Society for American Archaeology on a higher plane than it has occupied heretofore, and as the Society rises in usefulness so shall AMERICAN ANTIQUITY win a larger audience among those interested in the prehistory of the Americas.

Neil M. Judd, *President*

CONGRATULATIONS—With this number a new Editor assumes the duties and responsibilities of directing the publication of this journal. He has been carefully and wisely selected by your representatives at the last annual meeting of the Society. Those of us who are familiar with Douglas S. Byers' work and ideas are pleased and impressed by his well rounded qualifications to successfully guide AMERICAN ANTIQUITY toward higher standards and greater service to American archaeology.

However, he has undertaken a task which can not be successfully performed by one man. The degree of his success will necessarily depend upon the degree of support and cooperation which he will receive from the other officers of the Society, from the contributors to the journal, and from the membership of the Society in general. The journal will function to your advantage in direct ratio to your active disposition to be constructively helpful. During the past four years, the Society has demonstrated its collective will and ability to respond quickly and intelligently to its Editor's calls for aid, and has lent generous support to his experimental policies and projects. Your retiring Editor wishes to express the urgent hope that this will continue to an ever increasing extent to be your active attitude.

Mr. Byers is to be congratulated upon the confidence in him expressed by the Society in selecting him to command its official voice, and the Society is equally to be congratulated in its propitious choice. Given our full cooperation, AMERICAN ANTIQUITY, in the capable hands of its new Editor, will improve in scientific status and service to all sincere students in the American field.

W. C. M.

ARCHAEOLOGICAL REMAINS, SUPPOSEDLY NAVAHO, FROM CHACO CANYON, NEW MEXICO[1]

ROY L. MALCOLM[2]

UNTIL recently there has been little attempt to trace the early history of the Navaho in the Southwest through their archaeological remains.[3] While some investigators were studying Pueblo archaeology, they did record certain discoveries which tend to throw some light here and there on the earlier history of the Navaho. In the summer of 1937 a reconnaisance of archaeological sites, putatively Navaho, was made in Chaco Canyon, New Mexico. The sites were mainly on, or at the base of western Chacra Mesa, some eight miles east of Pueblo Bonito. Interesting information was gathered, particularly in regard to house types, pottery, burials, textiles, and certain other items of material culture which may be correlated with ethnological data on the Navaho.

HOUSES

The Navaho hogan has been described by a number of writers but they have apparently slighted, and in most cases entirely overlooked the important fact that the Navaho only fairly recently gave up the use of stone houses in which they lived over a long period of time. Descriptive reports on Navaho house types, namely, those by Mindeleff,[4] Shufeldt,[5] and the Franciscan Fathers,[6] are excellent in their descrip-

[1] This project was financed by the Division of Anthropology of Harvard University, Cambridge, Mass. The writer is indebted to the Division for its aid in this work and to Dr. Clyde Kluckhohn for his assistance and advice in handling the material. The writer is also indebted to the Field School of the Department of Anthropology, University of New Mexico, for assistance in carrying on the work in the field.

[2] Member of the Southwest Museum, Los Angeles, California.

[3] For information on the genesis of the Navaho, based upon ethnological, linguistic, and legendary testimony, one may turn to the following references: (1) F. W. Hodge, The Early Navaho and Apache. American Anthropologist, Vol. 8, 1895; (2) Washington Matthews, Navaho Legends. Memoirs of the American Folklore Society, 1897; (3) C. A. Amsden, Navaho Origins. New Mexico Historical Review, Vol. 7, No. 3, July, 1932; (4) Paul S. Martin, Origin of the Navaho. Field Museum News, Vol. 7, No. 9, Chicago, 1936, p. 2. In reviewing the evidence brought forth by Hodge, Matthews, Amsden, and Martin, and through subsequent investigations by the writer, it would seem that the Navaho appeared in the Southwest sometime between 1200 A.D. and 1500 A.D.

[4] Cosmos Mindeleff, Navaho Houses. Seventeenth Annual Report, Bureau of American Ethnology, 1898.

[5] R. W. Shufeldt, The Evolution of House Building Among the Navaho Indians. Proceedings of the U. S. National Museum, Vol. 15, 1892, pp. 279–282.

[6] The Franciscan Fathers, An Ethnologic Dictionary of the Navaho Language. Saint Michael's, Arizona, 1929.

tions of the various methods employed in the construction of the Navaho hogan, but mention the use of wood and mud only. The so-called "fork-stick" and "squatting" hogans have been the recognized forms for the old Navaho. However, a type of hogan constructed of a circular wall of coursed or uncoursed stone, and roofed over with cedar and piñon timbers must be considered as one of the early types of Navaho habitations, a type which survived at least until the turn of the century. Some early accounts, apparently overlooked by these writers, mention stone houses being used by the Navaho. There is mention by a Spaniard, Major Don Joachin Codallos, in a report made on October 3, 1744, after an expedition into the Navaho country, that the Navaho were living in stone and mud houses, and wood and mud houses, usually on high points of land.[7] The first known account of the Navaho Indians written by an American says that, "Their houses are built of stone, some one and another two stories high."[8] U. S. Hollister in describing a type of winter hogan says, "A rich Navaho will build a hogan of logs or of rough stones laid up without mortar, and covered with timber and earth."[9] Another reference indicated that the Navaho had lived in stone houses.[10] Washington Matthews in describing Navaho hogans stated,"—again they are occasionally built partly of stone."[11]

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[7] From a Spanish manuscript entitled, "Original Depositions Sent to the Superior Government of the Most Excellent Count of Fuenclara, Viceroy, Governor, and Captain General of this New Spain." by Sergeant Major Don Joachin Codallos y Rabal, Governor and Captain General of New Mexico in conformity with the order of His Excellence in his dispatch of October 3, 1744. Information on this was received from Mr. Arthur Woodward and Dr. W. W. Hill.

[8] From a newspaper article which appeared in the Missiouri Intelligencer for April 3, 1824, and was entitled "Nabijos." It was written by Nathaniel Patten, editor of the paper, who had obtained his information from James Purcel or Pursley, an American who had resided in New Mexico for a number of years, being the man Zebulon Pike found in Santa Fe when he made the trip in 1804. I am indebted to Mr. Arthur A. Woodward of the Los Angeles County Museum for this information.

[9] U. S. Hollister, The Navajo and His Blanket. Denver, Colorado, 1903, pp. 70–71, illustration on page 74.

[10] Schoolcraft, History of the American Indian Tribes, Part I, page 519, footnote. This note referring to "Navahoes" and "Moques" alike, states that, "These tribes are represented as occupying stone dwellings without roofs, and raising sheep, but still of preditory habits, and formidable enemies."

[11] Washington Matthews, Navaho Legends. Memoirs of the American Folklore Society, 1897, page 15.

For additional references to Navahos and stone houses, see Samuel G. Drake, The Book of the Indians, 8th ed. Boston, 1841, p. ix, Rufus B. Sage, Scenes in the Rocky Mountains, Philadelphia, 1846, pp. 180–181.

The Peabody Museum of Harvard has, in its collections of photographs, several old pictures showing the use of stone in the construction of hogans. One taken by the late Dr. Putnam in 1901 in Chaco Canyon itself, near the Pueblo ruin of Casa Chiquita, is shown in Plate I.

It was found that the stone hogan ruins appeared in Chaco Canyon with some variance in form. Sites included in the survey that could be fairly definitely identified as Navaho numbered forty-eight. Of this number, thirty-one were of the circular type of stone wall construction and were single units. In some of these only the foundation stones were left *in situ*. In other ruins the walls consisted of two, three, and four layers of flat stones, and in a few where the walls had not fallen in at all, or to a very small degree, the structures stood four feet high, or better, with many strata of stone masonry. Some of these stone hogans used a large boulder or sandstone ledge for the rear wall. These, of course, were not strictly circular in form but were essentially the same general type of dwelling, for the builders had merely taken advantage of nature to save time and labor in construction. These circular units varied in interior diameter from 7½ feet to 17 feet 3 inches, the average being around 12 to 14 feet. In a number of cases, the east-west diameter varied from the north-south diameter by a few inches, but not enough to change the general shape of the structure. The measurements of these hogans compared favorably with interior measurements taken by Cosmos Mindeleff of four typical hogans of the "forked-stick" variety. Specifically these measurements were:

17 feet 10 inches × 18 feet
12 feet 8 inches × 12 feet
14 feet 5 inches × 14 feet
14 feet 9 inches × 15 feet

These measurements could be matched almost exactly by four typical hogans picked from the Chaco Survey.

Three types of stone construction seem to have been used in these circular hogan ruins. One type was made up of comparatively fine masonry, using thin slabs of sandstone for the building material. The slabs overlapped and were closely fitted together, allowing little space between. Where spaces did occur, small pieces were used to fill in the chinks; no mortar was used in this type of construction. In some cases this finer masonry is reminiscent of the Pueblo masonry and may have been inspired by Pueblo cists located in the rocky ledges close by. This type of masonry was found in ruins in one locality only, the top of

Navaho Hogan in Chaco Canyon. Photographed by F. W. Putnam in 1901.

FIG. 1. Small Hogan ruin on Chacra Mesa.
FIG. 2. Remains of wall of rock shelter shown at right, under rock. Hogan ruin in background.

western Chacra Mesa at a point that was isolated and rather difficult to reach from below. The seven hogan sites found here were of various types and were all within one hundred yards of each other.

A circular hogan of fine masonry with a small interior diameter of 7 feet 6 inches and with walls standing 4 feet 5 inches in height was found near the mesa edge (see Plate II, Figure 1). The entrance to the structure faced the east, as did all entrances found in the hogan ruins, following the usual Navaho tradition in this respect. The entrance was peculiar in that the wall was projected out in an arm, the same thickness as the rest of the wall construction, on either side of the entrance to the extent of 1 foot 8 inches, suggesting the beginning of a sort of vestibule or antechamber. The entrance was 1 foot 8 inches across, and was the only one of its type found in the survey. Note the striking similarity between this ruin, shown in Plate II, Figure 1, and the inhabited hogan pictured in Plate I. The only apparent difference between the two structures is that the hogan pictured in Plate I was larger, and stones more nearly rectangular were used in the wall construction. One dwelling found in the Chaco Survey was indeed an unusual structure. Built with the finer type of masonry, it was rectangular in plan and consisted of two chambers with one wall common to both, there being an entrance to each chamber on the east side. These entrances lacked the vestibule of the circular hogan just mentioned, however. The north chamber was 8 feet 7 inches square; the south chamber was 16 feet 6 inches north to south and 9 feet east to west, with walls standing roughly 4 feet 4 inches in height.[12]

The second type of construction found in the hogan ruins made use of stones, roughly rectangular in shape, set in uncoursed style. Mud mortar was occasionally used in structures of this type. The dimensions and circular plans in these dwellings followed the style found in others previously discussed.

The third type of construction, found in three cases, used stones roughly rectangular in shape, set in coursed style. Mud mortar was used in this type of dwelling.

Turning our attention now to other regions we find that there have

[12] H. S. Colton noted a similar type of structure in the "Cliff Dweller" region of Central Arizona. There were a number of dwellings found in his survey, both single and double units, rectangular and possessing vestibule entrances facing the east. In one instance a double circle was found. There was some indication that these structures may have been connected with the Navaho.—H. S. Colton, Did the So-Called Cliff Dwellers of Central Arizona also build Hogans? American Anthropologist, Vol. 22, N.S., 1920, pp. 298–301.

been discovered ruins which possibly bear some relationship to those found in the Chaco area, and which may help to solve the problem of their origin. Mr. Richard Van Valkenburgh[13] reports circular structures similar to those found in the Chaco Survey, in the Gobernador region, in the Largo Canyon, and along the San Juan River. This general region is old Navaho country. Benavides mentions the Navaho as living in Northwestern New Mexico at the beginning of the 17th century.[14] A. V. Kidder reported ruins of the historic period in the Gobernador and Largo canyons, tributaries of the San Juan which entered it on the south side near the Colorado-New Mexico line. Kidder speaks of hogans associated with, and contemporaneous with, stone structures of a Pueblo type. He relates that, "hogan-like structures are built in every case within the enclosing defensive walls, close to the stone houses. They are much decayed, but all show the same general features, being circular in ground plan, eight to ten feet in diameter, and made of logs set in the ground and meeting at the top, tipi-style. They seem to have been covered with sod or earth and to have been entered by short, low passageways of *stone* [italics mine], roofed with split cedar. From the condition of their beams they appear to be contemporaneous with the stone houses."[15]

Kidder feels that this Navaho-Pueblo association in the Gobernador may represent a refugee settlement of Pueblos and Navaho who fled there after the last insurrection against the Spanish in 1696, when the Navaho were allied with the Jemez and their Pueblo allies of Acoma and Zuñi. The Jemez were completely routed, and their allies, the Acoma and Zuñi deserted them, so they were forced to flee north to the Navaho country. Gobernador Canyon is in this old Navaho region and was located a hundred miles from the nearest Spanish settlement of that time. Being in a wild, inaccessible district it would have afforded an ideal refuge.

Mr. Frank Hibben reports single unit houses found in the Gallina country of northern New Mexico dating from the 12th century, and associated with a Woodland-like type of pottery. Some of the pottery

[13] I am indebted to Mr. Richard Van Valkenburgh of the U. S. Indian Service, who has explored northwestern New Mexico extensively for several years, for descriptions of stone hogan-like ruins from this region, and for collections of associated potsherds.

[14] A. F. Bandelier, Investigations among the Indians of the Southwestern United States, carried on mainly in the years from 1880 to 1885. Papers of the Archaeological Institute of America, American Series III, Final Report, Part I, 1890, pp. 175–176.

[15] A. V. Kidder, Ruins of the Historic Period in the Upper San Juan Valley, New Mexico. American Anthropologist, Vol. 22, N.S., 1924, p. 325.

forms closely approach forms used by the Navaho.[16] H. P. Mera, in a recent article, describes four similar structures from the same area, one with a 13th century date and similar pottery associations.[17] Though these structures apparently have little in common with the Navaho hogan ruins from the Chaco, aside from being single units constructed of rough stone masonry and associated with conical-bottomed vessels similar to the old Navaho utility ware, they may have some bearing upon the early Navaho penetration of the Southwest. This will be discussed further when our attention is turned to the subject of pottery.

Another type of hogan quite different from the Chaco types previously discussed, but using stone construction, was described by G. B. Page in a recent article.[18] He relates, "In Canyon de Chelly and Canyon del Muerto, the region generally acknowledged to be the oldest continuously occupied in the Navaho country, the old type of hogan differed. In a personal interview, Mr. Haske Naswood, of the Soil Conservation Service, says the hogans in use in Canyon de Chelly prior to the exile of the Navahos to Fort Sumner in 1863, were semi-pit structures. A pit one or two feet deep was excavated; then low walls of undressed stone were built around the edges, on the top, and the whole was capped with roof beams laid in parallel formation, or was cribbed." This type seemed to be peculiar to the region mentioned and, as was stated before, it was not found in the Chaco Survey.

It would seem from the evidence at hand that the Navaho became acquainted with stone construction at a very early time in northwestern New Mexico, from Pueblo contact, if one pleases, and that they carried the idea of stone hogan construction with them on their drift southward, leaving remains of this type of dwelling in the Chaco Canyon region. The modern stone house of the Navaho is a recent innovation in type and method of construction, largely influenced, no doubt, by the white man. Page speaks of present-day houses—"The stone house is sometimes built on the conventional circular plan but sometimes it is rectangular. The walls of the stone houses are built higher than those of timber houses, the former usually rising to a height of seven or eight feet. The stone blocks are dressed enough to give a finished appearance

[16] From personal interview with Mr. Frank Hibben of the University of New Mexico. Also, see: F. C. Hibben, The Gallina Phase, AMERICAN ANTIQUITY, Vol. 4, No. 2, 1938, pp. 131–136.

[17] H. P. Mera, Some Aspects of the Largo Cultural Phase, Northern New Mexico, AMERICAN ANTIQUITY, Vol. 3, No. 3, 1938, pp. 236–243.

[18] Gordon B. Page, Navajo House Types. Museum Notes, Museum of Northern Arizona, No. 9, 1937.

to the exterior, and are built up with mud mortar. The rectangular stone house has a pitched roof. The circular house has a cribbed roof." Circular hogans of the type just described are found in existence and are inhabited today in Chaco Canyon.[19] Page reports the existence of modern hogans of the old type with undressed stone in the Canyon de Chelly today. He states that Haske Naswood reports recent hogans of the de Chelly type with undressed stone but with the pit missing (apparently "Chaco type") in Coyote Canyon.

It seems there has been a comparatively long tradition of stone dwellings among the Navaho. The Navaho are excellent stone masons as is shown in their work on the reconstruction of ruined pueblos. They seem to have a natural aptitude for stone masonry and it certainly seems reasonable to state that they have been engaged in building stone structures for several centuries, in an unbroken continuity in this activity up to the present day.[20]

To summarize the information at hand in regard to the hogan ruins found in the Chaco Survey, and their relationships, we find that there are three general types: (1) the circular type of a single unit, (2) the circular type with two units, and (3) one rectangular ruin with two chambers, which may be regarded as putatively Navaho. The circular type with a single unit was the most numerous, numbering thirty-one ruins. Where entrances were discernible, they faced the east, one possessing a vestibule. The circular double unit type numbered three

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[19] Dr. Clyde Kluckhohn, during the course of a reconnaissance of regions near the Chaco Canyon in the summer of 1938, noted numerous stone hogans closely resembling those discovered in the Chaco Survey. Several were of recent construction, with a few still occupied. Several hogans between Burnham's store and Tsaya were found that could be matched almost exactly, in measurements and general features of construction, by those discovered in the Chaco.

[20] Several pieces of pinyon wood were removed from certain hogan ruins. In one case three small pinyon logs were found partially buried in the soil of the hogan floor next to the walls. These specimens were found by Dr. Florence Hawley to have outside dates of 1888, 1895, and 1898. Dates were checked by Emil Haury, H. P. Getty, and Dr. A. E. Douglass. There was some indication of loss of a few rings from the outside of the specimens, so that dates from this hogan would probably indicate a time close to 1895 or 1900. The hogan involved was of the type pictured in Plate II, Figure 1. Another pinyon specimen was obtained from the rectangular hogan, mentioned previously in the body of this article, located approximately two hundred yards from the hogan where the other wood specimens were found. The piece was partially buried in the soil of the hogan floor with one end lodged between parts of the masonry. The rings of this specimen were so crowded that determination of a certain date, without other wood specimens from the hogan to be used as a check, was impossible.

ruins which still retained very little of their original walls. However, it should be determined that these followed the style of the single unit dwellings, actually consisting of two single units with part of a wall common to both. They were so oriented that the entrances to both units opened on the east side. The single rectangular ruin possessed two chambers with the entrance to each facing the east. This ruin corresponded in every other detail to circular ruins found in the vicinity, in having masonry identical to that of certain circular hogans, and in having walls of the same general height.

Masonry fell into three classes: (1) One type used thin slabs of sandstone, uncoursed, which overlapped irregularly; intervening spaces between these were chinked in with smaller pieces, the whole giving the appearance of comparatively fine masonry; (2) a second type consisted of stones, roughly rectangular in shape laid in uncoursed style with mud mortar occasionally used; (3) a third type consisted of stones, roughly rectangular in shape, laid in coursed style with the joints irregularly broken, mud mortar being used with this type.

Historical accounts indicated that the Navaho have built stone houses at least from the beginning of the 18th century, with strong indications pointing to a still earlier start in stone construction. Investigations in other areas mentioned, showed that the Navaho, past and present, constructed stone houses similar to those found in the Chaco region.

ROCK SHELTERS

Following the discussion of stone hogans it might be well to mention the rock shelters found on ledges near the top of Chacra Mesa and occasionally on the rincon floors along the base of the mesa. These shelters were characterized by an overhanging boulder with a remnant of a wall enclosing the space thus over-shadowed by the jut of the rock above. The space thus enclosed would be about the same size as that enclosed by the walls of the average hogan. The shelter shown in Plate II, Figure 2, had one end blocked with stones and mud mortar, forming a wall, part of which still remains. Note the relationship of this shelter with the hogan ruin in the background, about twenty-five yards away.

The problem as to whether or not these shelters served as habitations remains unsolved, due to lack of evidence one way or the other. There was not enough left of the walls to determine the type of entrance or even the existence of one. Except for potsherds nothing remained inside the shelters to throw light upon their usage. It would seem reasonable

to suppose that they might have served as living quarters, for they afforded the same amount of space as many of the hogans and were in close proximity to them, suggesting the possibility of contemporaneous residence of the Navaho, both in hogans and shelters. The shelters were identifiable as Navaho on the basis of the finding of an abundance of potsherds of the Navaho unpainted utility ware with them. Potsherds of this type were found scattered about the interiors of the shelters and on the ground and ledges close by. This ware was also found associated in great abundance with the hogan ruins. With these sherds of the Navaho unpainted ware there were also found sherds of the Navaho painted ware and sherds of certain historic Pueblo polychrome wares.

POTTERY

The Navaho unpainted utility ware found was generally grey in color and seems to represent the type formerly made. That is, it is comparatively finer and thinner than the crude ware made in recent times. The exterior surface of this pottery is scored by the use of a corncob scraping tool, which leaves a series of fine, parallel striations, a characteristic method employed by the Navaho in pottery manufacture until recently. This ware characteristically consists of conical-bottomed vessels or pots. The Navaho painted ware has an orange-grey paste, is sherd tempered, and averages around 5 mm. in thickness. It is generally slipped red on the exterior of the bowls, though it is occasionally slipped red on the interior as well. The corncob marks are often noticeable on the surfaces of this ware and the slipped red surface is generally well polished, presumably by means of a pebble. The sherds of this type in the Chaco Survey indicated a distinct superiority to the Navaho painted ware made in recent times.

Published reports on Navaho pottery have been extremely scanty. However, Dr. W. W. Hill has recently published on the unpainted ware,[21] and Harry Tschopik, Jr. of Harvard University has in preparation a monograph which deals mainly with the painted ware. Two general points can be made at this time. First of all, investigators have apparently overlooked the Navaho painted ware in published accounts. Secondly, there has been a gradual deterioration in Navaho pottery in recent years, evidenced by the comparative superiority of the old ware to the modern.

Found associated with the Navaho wares on the various sites were

[21] W. W. Hill, Navaho Pottery Manufacture. The University of New Mexico Bulletin, Whole Number 317, Anthropological Series, Vol. 2, No. 3, December 1, 1937.

sherds identified as Acoma Polychrome, or perhaps more specifically, Ashiwi Polychrome, a type which developed during the 18th century throughout the Little Colorado area. In a few cases a similar type of polychrome, described as an Upper Rio Grande type of the 18th century, and named Ogapoge Polychrome, was found associated with the other wares just mentioned.[22] These historic Pueblo polychrome wares were never found alone on the hogan sites, but were always associated with the Navaho painted or unpainted wares or both. In large collections of sherds of Basketmaker III, and Pueblo I, II, and III types from adjacent mounds and Basketmaker sites, these types never appeared.[23] At one hogan site 100% of the sherds found were of the Navaho unpainted utility ware, all of which were within the confines of the hogan ruin. The interior of another hogan ruin contained 100% Navaho unpainted ware; outside within 15 feet of the walls was found 49% Navaho unpainted ware, 17% Navaho painted ware, 14% Acoma-Ashiwi Polychrome, and 20% Pueblo I–II, all outside. Another site yielded other percentages, all outside the walls, 22% Navaho unpainted, 44% Acoma-Ashiwi, and 12% Basketmaker and Pueblo. Another, around the walls and at the entrance, yielded 40% Ogapoge Polychrome, 20% Navaho unpainted, 6% Acoma-Ashiwi, and 58% Pueblo I–II (all outside). In a rock shelter near the hogan sites, 83% of the sherds found were of the Navaho unpainted ware, 9% were of the Navaho painted, 4% were Ogapoge Polychrome, and 4% were Pueblo II. Still another rock shelter yielded 57% Navaho unpainted ware sherds, and 43% Pueblo II sherds. Found in certain hidden recesses on a rocky ledge near some of the Navaho sites were some nearly whole jars of the old Navaho unpainted utility ware; they were grey in color, rather large, thin walled, and possessed the familiar conical bottoms. When sherds found on the sites were compared with the vessels, they were found to be identical in type.

Turning our attention once again to the northwestern part of New Mexico where the Navaho have long been established, we find that Dr. Kidder describes a "blackware" found in the Gobernador and Largo which must have been the Navaho unpainted utility ware. This ware

[22] I am indebted to Dr. H. P. Mera of the Laboratory of Anthropology, Santa Fe, N.M., for identifying these Pueblo polychrome wares and for verifying the identification of the Navaho painted ware.

[23] I am indebted to Dr. Florence Hawley for aid in identifying Pueblo sherds and for verification of the Navaho unpainted utility ware. The writer is also indebted for information and verification received from Prof. Leslie Spier, Lyndon Hargrave, Dale King, and Frank Hibben.

is often black from firing and pine-pitch temper. He describes the exteriors as having been scraped with corncob while still soft, leaving a series of fine parallel striations, which is the usual Navaho procedure. The ware was thin walled and compared in all other respects to descriptions of the Navaho unpainted ware. He describes another thin polychrome ware which has since been known as Gobernador Polychrome.[24] Potsherds collected from hogan ruins in the Gobernador, Largo, and adjacent territory by Richard Van Valkenburgh show Gobernador Polychrome, Navaho painted ware, and Navaho utility ware, and the same historic Pueblo pottery found in the Chaco Survey. It would seem likely that the Navaho living in the Gobernador region got pottery from the Pueblos and that this use of Pueblo pottery extended to the Chaco Canyon region. This appears as an important ethnological relationship, and certain observed phenomena in present-day Navaho material culture might be traced back to this and other contacts with various Pueblo groups.

In studying this contact between Navaho and Pueblo groups, a problem arises in regard to pottery forms. As pointed out to the writer by Prof. Leslie Spier, the tendency to accept, without reservation, all conical or pointed-bottomed utility ware in the Southwest as being Navaho, is rather dangerous. This problem crops up in the Gallina area where Frank Hibben found the conical-bottomed utility ware associated with single unit houses dating from the 12th century, referred to above. This ware in a few cases resembled the Navaho utility vessels in having turned-back rims, producing the fillet effect, though the Navaho method is to apply the fillets separately. A few sherds showing the Navaho-like striations, produced by the corncob scraping tool, were found associated with the other types of pottery from Hibben's Gallina excavations. These sherds were also thin-walled, producing an appearance very similar to that of the Navaho sherds. In a few cases, whole pots came within the range of Navaho shapes, long and slightly compressed at the necks. Other conical-bottomed pots found in the Gallina were squat and were quite different from the Navaho form. Associated with the conical-bottomed ware in the Gallina, was a black-on-grey ware taking a variety of forms and distinctly different from the pointed-bottomed variety.

H. P. Mera, in the article previously referred to, further explains the culture found in the Gallina area. He states that, "It has been

[24] A. V. Kidder, *op. cit.*

demonstrated that Woodland-like pottery shapes in an otherwise predominantly Pueblo complex, were in use from at least the beginning of the 12th century up until about the first part of the 14th." He also points to an apparent problem which arises from this situation; that is, whether the "Pueblos" introduced this style to the Navaho, or whether the Navaho introduced the Woodland-like forms independently. History shows that the Navahos had contact with the Pueblos as early as the latter part of the 17th century and that Pueblo peoples went north to live in the Navaho country in the general region of the Gobernador and Largo at that time. According to Mera, it was during the first half of the 18th century that the association of Navaho and Pueblos brought about a new type of polychrome ware, decorated on an orange-colored ground (Gobernador Polychrome). There is a resemblance between this ware and the Navaho painted ware of the 19th century.

In summary, it is found that associated with the sites in Chaco Canyon, and thereby further substantiating their Navaho identity, were sherds of two types of Navaho ware; namely, the Navaho painted ware, and the Navaho unpainted utility ware. Upon examination these wares seem to be superior to the crude ware made in recent times. Definitely associated with the Navaho sites, and not found elsewhere in the vicinity, were two 18th century Pueblo wares, namely, the Acoma-Ashiwi Polychrome and the Ogapoge Polychrome (Upper Rio Grande type). This apparently points to the possibility of dating the sites somewhere in the 18th century. Further, these very same Pueblo polychrome wares were found associated with Navaho potsherds at sites, putatively of Navaho origin, in the Gobernador and Largo Canyon regions and adjacent territory, thus apparently indicating a definite use by the Navaho of certain Pueblo wares within the last two hundred years or so.

STONE CISTS AND A NAVAHO BURIAL

Other interesting items discovered in the Chaco Survey, tending to throw light upon the early history and culture of the Navaho, were stone cists and a Navaho burial. The cists were discovered during the course of exploring the top of western Chacra Mesa. Rock tables and ledges were noticed rising a few feet above the surface of the mesa top. From the sides of these, cists had been gouged by nature and improved upon by man. These consisted of some that had been walled up to a more or less air-tight condition to serve as storage places for corn and other staples.[25] One cist was found which was still sealed, and when

[25] W. W. Hill says of the Navaho storage habits, "Natural caves (or cists) in cliffs

opened, revealed about a dozen ears of dried corn. Some of these cists had been blocked at one end to improve their utility. Some large cists showed traces of having been used, and may have served in some cases as burial vaults, first by the Pueblos and later by the Navaho. It is interesting to note that stone cists are considered quite desirable for funerary purposes by the modern Navaho. Dr. A. V. Kidder[26] and Earl Morris[26] found a number of instances where the Navaho had used stone cists for graves in recent times. Mr. Van Valkenburgh reports use among the Navaho of stone cists and stone crevasses as places for burial. In a published report by Charles A. Amsden and L. C. Wyman, a Navaho burial found in a stone cist grave is described.[27]

In the course of exploring the talus slope at the head of a rincon, and at the base of Chacra Mesa, the writer came across what must have been a rock shelter at a very remote time. The whole front portion had been sealed up with stones of varying shapes and sizes, reinforced with mud mortar, this wall in turn being covered for the most part with soil that heaped up to leave very little of the stone wall uncovered. An aperture just large enough to permit the entrance of a man's body was left, though rocks piled in front had obscured this opening from view. Subsequent examination of the cave within revealed a burial, which upon study proved to be of undoubted Navaho origin but quite old.

The burial, that of an adult male,[28] was wrapped in alternate layers

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were used for storage. Walls of stone were built across the door. These were then covered with flat stones rubbed with moss to hide the place. Corn, beans, dried squash, and dried melon were the articles generally stored." W. W. Hill,—Agricultural and Hunting Methods of the Navaho Indians. Yale University publications in Anthropology, No. 18, 1938.

[26] Information from personal interview.

[27] Chas. A. Amsden and L. C. Wyman, A Patchwork Cloak. The Masterkey, Vol. 8, No. 5, Los Angeles, September, 1934.

[28] Examination and measurements of the cave were accomplished with the assistance of William Mulloy of the University of Utah. The skeleton, removed by Donovan Senter and the writer, was further examined and measured. From Senter's total measurements and observations the following have been taken:

1) Cranial—The skull, that of an old adult male of 55 to 65 yrs., showed medium development of the eye-brow ridges and general muscularity. There was a slight artificial lamboidal deformation; the forehead was medium in height with a slight slope. There was medium alveolar prognathism and the malars showed a medium lateral projection and a large anterior projection. The cranial serrations were almost entirely obliterated, an important clue to age. The mandible was medium in size, with a bilateral chin form with medium chin projection. The skull had a glabello-occipital length of 169 mm. and a maximum width of 141 mm., giving the brachycephalic index of 83.

2) Upper Extremity and Pectoral Girdle—The left and right humerus were each

of textile and hide. The hides consisted of a large piece of buffalo hide placed next to the body, hair inside, which apparently served as a mantle of some sort. A U-shaped piece had been cut out for the neck and on the right side appeared traces of cutting for a sleeve. The bottom and the left side of the piece was jagged and decomposed, showing no evidences of cutting or trimming. Two smaller pieces of buffalo hide were found showing evidence of having been trimmed but gave no indications as to their probable use. They were roughly rectangular, about two feet long, by a foot wide. A piece of sheep hide also accompanied the burial, having no definite shape, but showing evidence of having been trimmed in spots. It was roughly 26 inches long by about 21 inches wide.

The textiles found with the burial were examined by Charles A. Amsden of the Southwest Museum, Los Angeles, and by Eric Douglas of the Denver Art Museum. A piece using the simple 2-2 warp, with plain stripe and plain weave, was examined and pronounced as probably Navaho of a type made before 1850. Dr. Wyman of Boston University examined the striped textile and pronounced it as being almost identical with that found by Amsden and himself in an old Navaho burial.[29] Dr. A. V. Kidder noticed a likeness in this type of blanket and that seen in certain Navaho burials discovered by himself and Earl Morris in the regions of the Gobernador and the Canyon de Chelly.[30] This blanket, with plain rusty black and white wool in alternate stripes is very similar to several old Navaho blankets and fragments of blankets

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314 mm. in length, with a minimum width of 15 mm., and showed no perforation of the olecranon fossa. The right and left radii were 236 mm. and 228 mm. respectively. The right and left ulnae were 259 mm. and 254 mm. long respectively. There were pronounced atrophic patches in right and left scapulae which measured 150 mm. and 152 mm. in height, and 106 mm. and 107 mm. respectively in breadth. The clavicles were quite large with the right being 162 mm. long and the left 157 mm.

3) Lower Extremity—The femurs possessed no third trochanters and torsion was medium, and bowing submedium. The right was 436 mm. long and the left 440 mm. with middle lateral width being 26 mm. and 27 mm. respectively. Right and left tibia possessed squatting facets and were 363 mm. and 360 mm. long respectively. The right and left fibulae were 362 mm. and 357 mm. long.

4) Pelvis and Foot—The pelvis as whole was narrow, with a heart-shaped brim, and a total breadth of 295 mm. The sacrum possessed five segments, had a pronounced curve and was homobasal in type. In the right and left calcaneum the perineal tubercle was very large in contrast to that of the Pueblo which is characteristically small.

[29] C. A. Amsden and L. C. Wyman, *op. cit.*

[30] Information from personal interview.

described by Amsden.[21] A striking similarity is seen between this striped blanket and one found in a Navaho burial in a cave cist by Amsden. Buffalo hide and a mantle or dress of Pueblo type, black with blue indigo border, were found with the blanket. Amsden felt that in view of all circumstances cited his material should be assigned to near the year 1800. It is certain that the plain striped blanket was early, but probably survived as a common form of mantle until around the year 1860, at least. A Navaho is pictured with a blanket of plain weave similar in appearance to the striped blanket from the Chaco, in a drawing of Mollhausen, dated 1858.[22]

Another important item from the burial was a rectangular piece of "blanket" about four feet long and nineteen inches wide, which from its position on the body, seemed to form a sort of kilt. It was of blue indigo, dark in hue, and plain with no design. Strands of the same material found lying under the "kilt" and tied in a simple knot, were possibly used to support the "kilt." The weave of this piece of cloth was examined by certain authorities previously referred to, and pronounced definitely Puebloan in type.

Stages in Navaho textile development may be followed back to the point where Navaho textiles are hard or impossible to distinguish from Pueblo textiles. Indeed, this seems to be another point in favor of Puebloan influence in the development of certain phases of Navaho material culture. Referring again to the time when the Navaho and the Pueblos lived together in Gobernador Canyon, Mr. Amsden makes the point that if the Navaho were not already weavers, they certainly had a golden opportunity of becoming such during the Pueblo Rebellion, with experts living among them, and their flocks growing rapidly. Amsden states, "In the light of this situation (and bearing in mind that Spanish colonists with European sheep had been in New Mexico only one century) it is highly probable that the Pueblo Rebellion established weaving among the Navaho, and that we may consider it a tribal craft from then onward. Some beginnings may have been earlier, to be sure, but it would be rash to assume that a tribe of semi-nomadic huntsmen, could, in the short space of a century, make the fundamental readjustments implicit in the pastoral mode of life and the practice of weaving."[23]

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[21] Chas. A. Amsden, Navaho Weaving. Santa Ana, 1934, Plates 62 and 63.

[22] *Op. cit.*, Plate 57.

[23] Mr. Alden Hayes and other students of the University of New Mexico Field School found under a ledge (close to the vicinity of the writer's investigations) four bat-

With the burial were found wooden dice of a type used by the Navaho.[34] Two kinds occurred in the group discovered, one being a flat rectangular kind, six in number, and the other, numbering seven pieces, flat and boat-shaped in appearance. Dr. Kluckhohn showed these dice to older Navaho, both in the Chaco Canyon region and the Ramah area, and they were uniformly identified as (cé ʔezóli·). The rectangular ones were said to be male, and the boat-shaped ones female. But several informants affirmed that the female type was very unusual. It was said that the dice were used in almost the same way as the familiar "bouncing sticks" (cidił), which are similar in appearance though longer.[35]

Other articles found with the burial were one-piece leather moccasins, a plain leather bowguard; lying under the body was a plain, empty leather pouch tied at the top with a leather thong. Lying near the body was a grooved arrow shaft straightener, all of which could be said to be Navaho. The burial chamber itself was interesting. The whole cave was roughly three feet, two inches high and was divided into three sections by stone slabs standing on end, the largest of which was the part containing the burial. The floor of the whole was covered with stone flagging, the entire arrangement looking as though it had at one time been used as a Basketmaker or Pueblo storage cist, which from previous discussion, would not appear to be at all inconsistent with Navaho tastes in the matter of resting places for the dead.

SUMMARY

Three types of stone houses have been described. Historical accounts indicate a very early start in stone construction for the Navaho; at least from the beginning of the 18th century, and possibly earlier, these people built their hogans of stone. Rock shelters appear to have

tens, which were identified for Dr. Clyde Kluckhohn as—(be·ńkiʔnfl̆i·š) by Navahos of the Chaco Canyon area. These battens were of a type used in weaving narrow belts and stockings. They varied from 58.8 cm. to 68.0 cm. in length and were all roughly 2.5 cm. wide. They were rather flat, being only a few millimeters thick. One of the battens had two pairs of V-shaped notches cut into the sides, about four inches apart, possibly serving as places of attachment for cords to hang the batten from the waist.

[34] Washington Matthews describes a Navaho dice game in his book, Navaho Legends, previously cited, on page 219, footnote 47.

[35] The rectangular dice measured 39 mm. to 46 mm. in length, and were consistently 14–15 mm. wide. They were generally 5 mm. thick, one being 6 mm. thick, and they all tapered to 2–3 mm. thick at the ends, one being 1 mm. thick at the end. The boat-shaped dice were a little flatter, being 2–3 mm. thick at the center and tapering off to 1 mm. at the ends. The length of these varied from 43 mm. to 49 mm. and the width at the center was 12–14 mm. and at the ends, 3–4 mm.

been used by the Navaho, perhaps for living quarters as well as for a variety of other purposes.

In regard to pottery, we find that there were two types of Navaho wares found at the sites: painted ware, and the unpainted utility ware. Upon examination these wares seem to be superior to the crude ware made in recent times. Definitely associated with Navaho sites, and not found elsewhere in the vicinity, were two 18th Century Pueblo wares, namely, the Acoma-Ashiwi Polychrome and the Ogapoge Polychrome wares. This same Navaho-Pueblo relationship in pottery was found in other regions, and apparently points to a use by the Navaho of certain Pueblo wares during the past two hundred years or so.

The use of cists for burials appears, and the close connection between the Navaho and Pueblo textiles is further substantiated. The textiles from the burial appear to be of a type in use during the early part of the last century, though this use may have continued well into the last half of the 19th century. The information at hand points to increasing evidence of Pueblo influence in certain phases of Navaho material culture, though the whole may still be predominantly a mixture of the hypothetical original Navaho and sources other than Pueblo.

AN ANTHROPOLOGICAL RECONNAISSANCE OF ANDROS ISLAND, BAHAMAS

JOHN M. GOGGIN[36]

THIS is a report of archaeological and ethnological work done on Andros Island, Bahamas. No habitation sites of the Lucayans were found and evidence seems to show that the island was sparsely populated in prehistoric times. The famous "Indians" of whom so many tales have been written, turned out to be descendants of Negro-Seminole crosses instead of Lucayans. This work was done through five weeks during the months of July and August, 1937. Visits were made at all the mail boat stops and two weeks spent at both Mastic Point and Mangrove Cay.[37]

Andros Island is the largest and least explored of the Bahamas and lies to the west of the main group. Its extreme length is 104 miles and its greatest width, 40 miles. It is really more than one island as it is divided by three bights. The island is Pleistocene oölitic limestone that is eroded into many hills and, along the water, into bluffs. From the higher east side the land slopes to the west where it reaches the sea in a tangle of mud and mangroves. The greatest elevation is around 100 feet. The interior is heavily timbered with pine but only coppices of West Indian hardwoods are found on the coast.

Caves, which are found throughout the island are with few exceptions unsuited for human occupancy as they are mostly damp, dark limestone sinks which are entered through small openings on the surface.

Some of the best known caves are at Morgans Bluff. One of the northernmost is the only dry cave that has any fill left, although much cave earth has been removed by local people. Several test holes were made but no evidences of aboriginal occupation appeared. Another widely known group of caves are at Bluff Settlement near the Barracks Cays. These were not visited, but a complete description was given me by Mr. Forsyth, the Sponge Commissioner, who was born on Andros and has lived there for thirty-seven years. These caves are chiefly known because of a skeleton without accompanying artifacts that was

[36] Department of Anthropology, University of New Mexico.

[37] The author wishes to acknowledge the aid of his father, Dr. John W. Goggin of Miami, Florida, who made the trip financially possible. To Mr. Charles Bethel, Acting Colonial Secretary, and the Bahamas Government go thanks for permission to explore Crown Lands, and to Father Daniel Bangart of Mangrove Cay and Captain Jack Tkach of Nassau for living quarters and other help.

found there by Mr. Forsyth and a Mr. Reese. They are merely limestone sinks, as are those of the rest of the island.

One burial cave was found at Bain Hill, Mastic Point. Unfortunately the natives had worked it for cave earth. In the process they found a number of bones. These were thrown to one side where I was able to

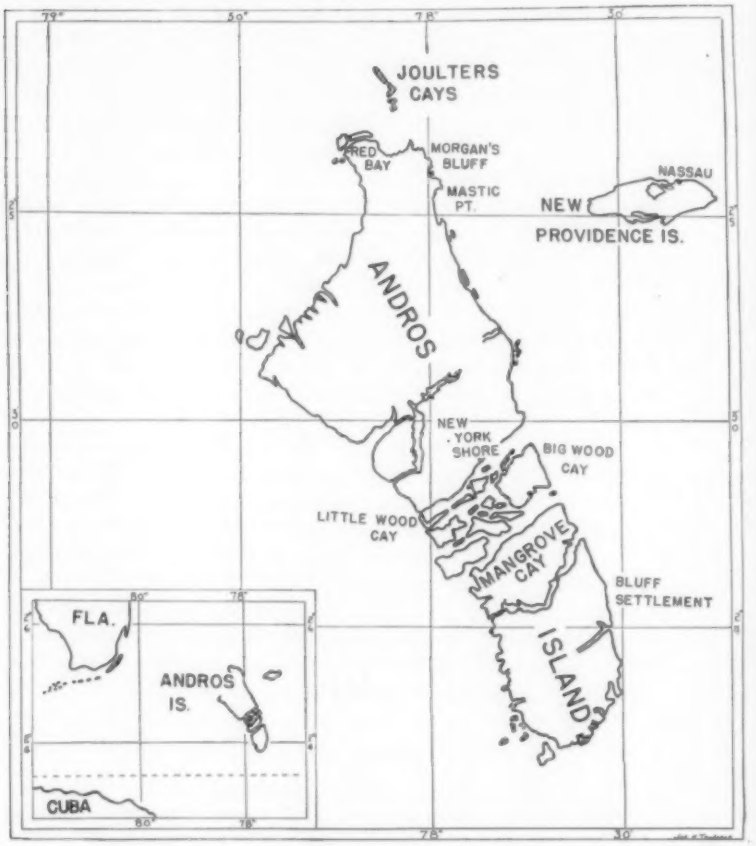

FIG. 1.—Sketch map of Andros Island, Bahamas, showing places mentioned. Taken from U.S. Hydrographic Office Chart with additions.

recover some of them. They represent at least two individuals.[38] The natives, however, took the skulls which are now lost. On Mangrove Cay there are a number of caves at Sinkert Hill, none of which show any evidence of aboriginal occupation. Several natives told of a cave on Big Wood Cay that was reputed to have contained a skull. Although we tried to find it on several occasions, no one was able to lead me to it.

The main trace of aboriginal occupation is in the form of stone celts, or "thunderbolts" as they are called by the natives who find them in their fields. They are very rare, but I was able to secure fourteen by purchase. Some of them had been in the possession of the owner's family for more than fifty years. These specimens are from Mastic Point, Little Wood Cay, New York Shore, and from several places on Mangrove Cay. The material in all cases is an altered peridotite (probably serpentine) that is foreign to this limestone island. There are large deposits of this serpentine in Central Cuba, and possibly that is the source for the raw material used on Andros. The range in length is from $2\frac{1}{2}$ inches to $6\frac{3}{4}$ inches. They present a great number of forms ranging from a true petaloid shape to triangular with rounded, square, and intermediate blades.[39] One double-bitted celt with parallel sides was bought. As a rule only the cutting edge is polished, but a few specimens have been polished carefully all over until the surface is as smooth as glass.

The colored natives have a great many superstitions pertaining to the "thunderbolts," They believe that the stones come down in lightning and that it takes them seven years to come back to the surface of the earth. The true test to determine a "thunderbolt," they believe, is to tie a string around the supposed object and put it in a fire. If the string does not burn it is a real "thunderbolt."[40] On this belief they tried to sell me many smooth rocks that had been tested and found true. This is rather interesting, as Fewkes records a test for similar implements that is the exact opposite of the above (presumably from

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[38] From a superficial examination of the long bones, Dr. Clyde Kluckhohn of Harvard, is of the opinion that they may not be Indian remains.

[39] They are still of the typical Greater Antillean form. See Fewkes, J. W., A Prehistoric Island Culture of America. Annual Report, Bureau of American Ethnology No. 34, Washington 1922. Krieger, H. W. Archaeological and Historical Investigations in Samana, Dominican Republic. U.S. National Museum Bull. 147, Washington, 1929.

[40] This is the same test as used on the Mosquito Coast. Conzemius, E., Ethnographical Survey of the Moskito and Sumu Indians of Honduras and Nicaragua. Bureau of American Ethnology, Bulletin 106, Washington, 1932, page 135.

further south in the Antilles). His information was that the celt was a true "thunderbolt" if the thread burned!

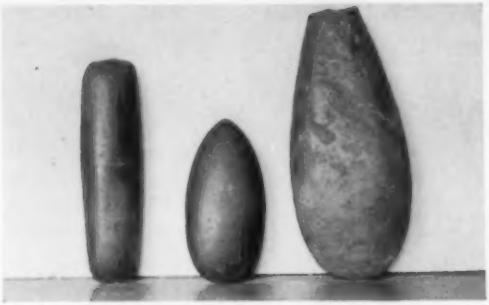
Besides the finished tools, numbers of non-indigenous igneous stones (mostly in the form of waterworn boulders and pebbles) are found by the natives. I was also fortunate enough to secure an unfinished celt. It had progressed so far that the blade had been formed by working two sides of the stone, but had not been shaped or polished.

The present colored inhabitants date back to about the middle of the 18th century. They have little idea of the existence of the Lucayans although a few of the individuals know that celts are of Indian origin. The only direct reference I heard was in a remark by an old man that his father told him that the Indians took conchs out of the shell by knocking a hole in the side of the shell and loosening the muscle of the animal, instead of breaking the spire of the shell off, as do the present natives. I was unable to find any aboriginal broken conch shells on Andros but all the aborigines of southern Florida used the method described by the old man, so the story is probably correct.

I do not think it is beyond the scope of this article to mention the legendary "Indians" of Andros who are supposed to use the bow and arrow still. The main settlement of these "Indians" is at Red Bay. I did not visit the settlement but at Mastic Point I met an old negro named Felix MacNeil who was originally from Red Bay and who was well informed on the subject of the old people. It is said that none of the older people are now living at Red Bay. MacNeil's story is as follows.

Around 1810 to 1820 (I computed the date by figuring from the ages of the various people in the line), a group of about 150 to 200 "black Seminoles" who had been fleeing from the slave catchers for many years came to Cape Florida on the mainland of the United States. They had been pursued for many years and every time that they settled down they would hear the footsteps of the slave catchers after them. They were tired and wanted a place where they would not be bothered. They heard from an English captain that the land of freedom was to the east. They decided to go there under the leadership of Scipio Bowleg (an "Indian doctor"). They sailed in dugout canoes and finally came to Red Bay on the west coast of Andros. Other smaller groups landed on the Joulter Cays north of Andros but they soon moved to Red Bay. With them they brought seeds of corn, peas, and pumpkins. For a long time these people held themselves aloof from the negros on the other side of the island whom they called "Congos" and "longas."

At the present time there is little evidence of their Seminole blood,



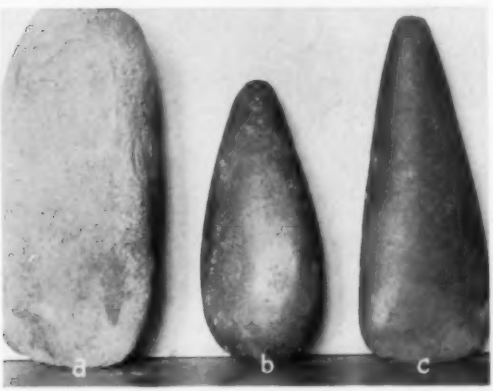
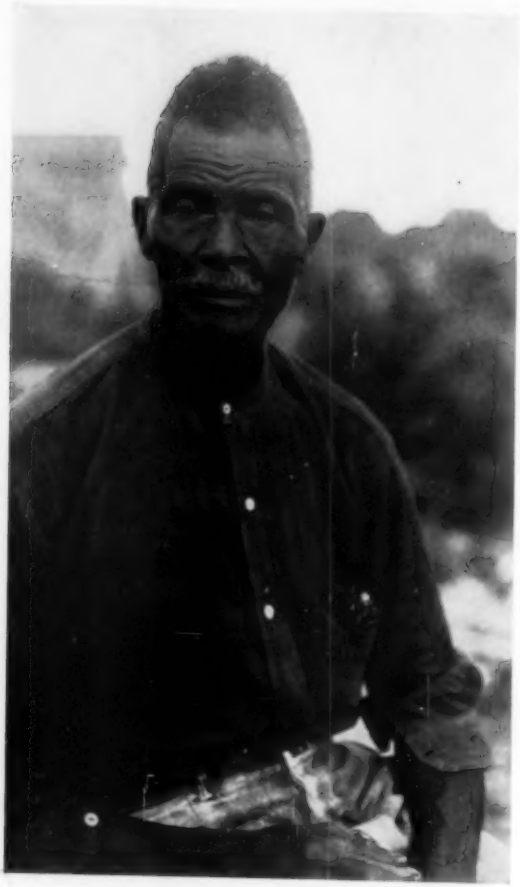


FIG. 1.—Celts from Mastic Point, Andros Is. Specimen at left is double bitted, 3½ inches long.
FIG. 2.—Celts from Mangrove Cay, Andros Is. Specimen at right is 3⅞ inches long.
FIG. 3.—a. Unfinished celt, 6 inches long Mangrove Cay, Andros Is.
b. Celt, Little Wood Cay, Middle Bight, Andros Is.
c. Celt, Mangrove Cay, Andros Is.



Felix MacNeil, grandson of Scipio Bowleg.
He shows Indian blood much more than any of the other people

but some of the people are known to be part Indian and appear so to a slight extent. The bow and arrow has been used up to recent times but is vanishing.

The bow, used for shooting birds and fish, was of two forms, both made out of the "cassao" wood: one is a flat bow with the string lying against it, the other is curved. The arrows had one or two feathers on them, but never three. They were pointed with a brass tack. At present the bow is used almost exclusively as a toy for the children.[41]

Other things known to have been brought from Florida were "pole houses" [log cabins, none of which are known now] and a type of lean-to made of stone and wood. Another custom that may owe its source to this migration is the use of the leaves and bark of Jamaica Dogwood *Icthyomethia piscipula* as a fish poison. Felix MacNeil's description of bruising the leaves and bark and then putting them in a pool where fish were caught by the receding tide, tallies with methods used in Florida and elsewhere.[42] When MacNeil was a young man (he is 76 now), remains of the canoes the old people came in were still to be seen around Red Bay. The name Bowleg is the only distinctive name still on the island that is now found among the Seminole. It is also known as far back in Seminole history as the middle of the 18th century.[43] The trip was very remarkable from the point of view of the length of the journey covered in a narrow dugout canoe across the Gulf Stream. However the Seminoles are known to have sailed a long way on trading voyages.[44] Another old man, known as an Indian, named George Oliver, was also met at Mastic Point. His grandfather, a half-breed Seminole, shipped on a British man-of-war from St. Augustine, Florida, and after

[41] Since this paper was submitted for publication the author has received from Felix MacNeil of Mastic Point a bow and two fish arrows. The bow is of the self type, 3 feet, 8 inches long, and an inch and three eighths wide in the middle with a slight taper at the ends. The inside is flat and the back is rounded. It is remarkably like the bows of the present Florida Seminoles. The arrows are four feet long, unfeathered, with a whittled point at one end and a nock at the other. The maker was unable to get the proper kind of wood so he made these as an exact model.

[42] Gower, Charlotte, D. Northern and Southern Affiliations of Antillean Culture, Memoirs of the American Anthropological Association, No. 35, Menasha, 1927, pages 26–27.

[43] Swanton, John R. Early History of The Creek Indians and Their Neighbors. Bureau of American Ethnology Bulletin 73, Washington, 1922.

[44] The only sailing canoe now left among the Seminoles is a badly rotted one at John Willys' camp in the Everglades. Bartram say that the Seminoles of Talahasochte Town on the Suwanee River traded all the way to the Bahama Islands in large dugouts. Travels . . . p. 225.

many years settled on Exuma Island. Later his family moved to Andros.

One of the objects of the trip was to search for some evidence of aboriginal trade or cultural connection with the mainland as evidenced by pottery or other artifacts. In this I was not successful, as no pottery was found or known to have been found on the island.[45] My failure to locate any habitation sites leads me to suspect that the aboriginal population must have been very scanty or, more probably, only temporary. Andros is not as fruitful an island as most of the others of the Bahama group. Soil is poor and scarce, and occurs only along the shore: on the eastern islands it is more abundant. The poverty of the colored people today compared with the condition of those on other islands illustrates this point. However, there is a possibility that the sites may not be recognized as habitation sites if they are shell mounds in the open, for the present negros use conchs to such an extent that there are large heaps of the shell around their homes and along the beach which might obscure the aboriginal sites. Then, too, deposits close to the shore are apt to be shifted and covered due to the violent hurricanes common to this area.[46] Other than celts, only one find of aboriginal manufacture is known. In a cave at Mangrove Cay, there was once found a dugout with paddles.[47] None of the natives, however, were able to take me to this cave.

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[45] According to Mr. Forsyth, who is interested in the aborigines and has made a collection of all the artifacts that he could get.

[46] The author has since been informed by Mr. Godfrey Olsen, of the Museum of the American Indian, Heye Foundation, that he has seen aboriginal shell deposits that have been covered by storms.

[47] Mosely, Mary, The Bahamas Handbook, Nassau, Bahamas, 1926, p. 67.

"ECCENTRIC" FLINTS OF OKLAHOMA

FORREST E. CLEMENTS[48] AND ALFRED REED[49]

DURING the past two years the attention of archaeologists and collectors has been directed toward peculiar types of chipped stone objects purportedly found in Delaware County, Oklahoma. Professional opinion is divided as to the authenticity of these specimens and various stories about them are in circulation. Although the specimens exhibit a large variety of shapes, the general pattern and type of workmanship recalls the so-called "eccentric flints" of British Honduras and Guatemala. For these reasons, it is felt that the facts so far as they are known should be presented.

Mr. Alfred Reed, co-author of this paper, is especially fitted to speak with authority on the subject for the supposed location of the finds is within a short distance of his home; he has personally interviewed the discoverer and acquired from him about 900 of the specimens. Dr. Clements has also talked with the man who claims to have found the eccentrics (a mixed-blood Indian, Mack Tussinger, who has lived in the locality all his life), and has examined closely about 200 of them.

Tussinger says that in 1926 he came across a low circular mound about four feet high and twenty-five feet in diameter in the second bench on the north side of the Elk River approximately six miles up from its junction with Grand River. This is in the northern part of Delaware County, situated in the northeast corner of the state. He dug a small shaft in the center of the mound and at a depth of four feet struck a cache containing 3,500 of these eccentric flints. They were between the skulls of several burials which were laid with the heads together, the bodies extending out from the center of the mound like spokes from the hub of a wheel. He does not remember how many skulls he found but thinks there were probably half a dozen. He gathered up the flints which were all heaped together in a pile and carried them home where he buried them in several small caches. During the interval from 1926 to 1931, he sold pieces to Dr. Barnard, a well known collector in Seneca, Missouri. Dr. Barnard purchased approximately 800 eccentrics, selecting these pieces from groups exhibited to him by Tussinger from time to time. Apparently Tussinger made no effort to

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[48] Department of Anthropology, University of Oklahoma.

[49] Oklahoma State Archaeological Society.

sell to anyone else during this period but in 1930–31 he became almost destitute and decided to seek a wider market, as he had more pieces than Dr. Barnard wished to buy. At this time he approached Mr. Reed who though by no means convinced of the authenticity of the specimens believed that they offered a problem worthy of serious consideration. He purchased nearly all of his 900-odd eccentrics direct from Tussinger. Mr. Reed paid from $1.00 to $3.00 for about 600 of his points with an average of $2.25 each including two dozen for which he paid from $8.00 to $10.00 apiece. His remaining 300 points ran from twenty-five to seventy-five cents and the average paid for the 900 eccentrics in the collection was about a dollar and a half each.

From 1931 to 1937, Tussinger gradually disposed of his alleged find to various collectors. Sometime during this period he entered into informal partnership with a man named Robertson who runs a gasoline station on U. S. Highway 66 just across the Oklahoma line in Kansas and not far from Miami, Oklahoma. During the last two or three years Robertson has done most of the peddling and the price has increased until the eccentrics now sell for several dollars each and there is one rumored to have sold for fifty dollars. At the present time Tussinger claims to have no more of the points in his possession and Robertson is supposed to have disposed of all but about 200. As stated above, Mr. Alfred Reed has around 900 in his collection. Dr. Barnard is reported to have about 800 and Mr. Clark Field of Tulsa, Oklahoma, has about 200. This accounts for around 2,100 of the supposed original 3,500 specimens. The remainder seem to have been sold in small lots to tourists along the highway and are no doubt widely scattered.

These specimens came to Dr. Clements' attention late in 1936 and in company with Mr. Reed, Dr. Clements visited the site designated by Tussinger as the place where he made the discovery. The area had been cleared and plowed so the site of the original mound was indicated only by a barely perceptible rise on the field level and a difference in color of the earth. Nothing could be determined by this inspection and a few weeks later Mr. Reed and Mr. Field made a small exploratory excavation. They reported that the earth below the plow line was obviously disturbed and at a depth of about two feet they encountered a single eccentric and fragments of human bones. They proceeded no further but arranged a lease on the site and turned it over to Dr. Clements to be excavated. The Department of Anthropology was already working in that vicinity on Lower Mississippi sites so a special

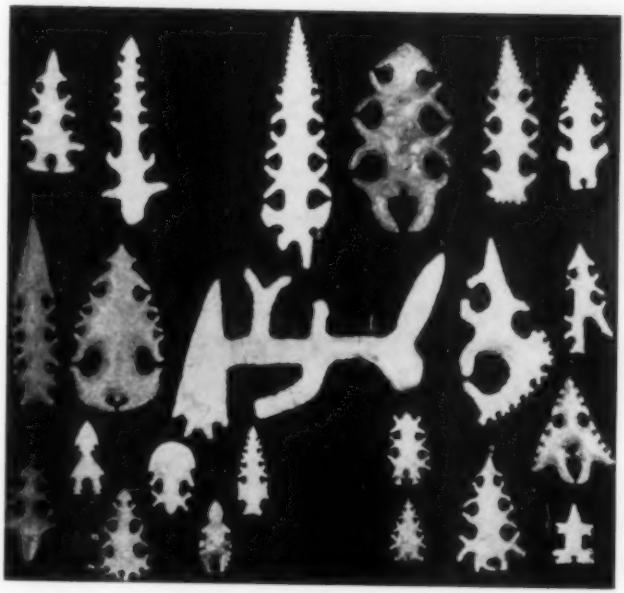

FIG. 1.—Eccentrics found by the University of Oklahoma excavators.
FIG. 2.—Typical eccentrics from the private collection of Alfred Reed.

crew was detailed under the supervision of Mr. Joe Finklestein, now a graduate student at the University of Chicago, with instructions to completely excavate the site.

These excavations revealed the presence of large disturbed areas below the plow level indicative of considerable previous digging. Scattered bones of disturbed burials were found and a total of six eccentrics. Five of these were near the surface in disturbed earth but one lay embedded in solid soil below the plow level. This last was a large, finely made specimen apparently representing a lizard. The associations, however, were not at all what one would expect, assuming the eccentrics to be genuine. While these associations were not numerous they consisted of crudely worked projectile points and scrapers of the usual recent Plains type. The few sherds found were likewise of this type. While the disturbed nature of the site made a definite conclusion impossible, it seemed likely that the Plains material underlaid the original level of the eccentrics.

Dr. Clements has examined several hundred of these specimens casually and about 200 with the microscope. None of those examined microscopically showed any traces of being worked with metal tools. A random sample of these were then compared with control pieces of identical chert which were flaked in the laboratory with a steel awl and then given an acid wash to remove traces of the metal. These control pieces not only showed microscopic bits of metal still clinging to the stone but also pitting from the action of the acid. None of the originals showed evidence of metal or of pitting which should have been present had they been subjected to acid treatment. Moreover, the planes of fracture were dull under the microscope and the edges where two fractures joined were smooth and worn rather than sharp as might be expected if these were recent forgeries. Likewise some of the flints showed evidence of patination.

Judging from those examined in the laboratory, there is no evidence of forgery that we have been able to detect and they give no appearance under the microscope of recent manufacture. It is interesting, moreover, to note that during the work at the great Spiro mound, 150 miles distant on the Arkansas River, there was found a single eccentric point of fine workmanship, almost identical to some of those supposed to have come from the Elk River site. This point was not found *in situ* but was screened from a pot-hunter's dump heap.

As stated above, these Oklahoma specimens are strikingly reminiscent of the Mayan eccentrics of British Honduras. The literature on

these Mayan artifacts is rather scanty, the most important reference being the paper by T. A. Joyce.[50]

The Mayan eccentrics are found in caches, sometimes under stelae and usually with no other associations. Their material is preponderately gray or buff chert although obsidian, shell and jadeite also occur. They are not supposed to have been utilitarian but to have been made solely as votive offerings. All the Oklahoma eccentrics were made of gray, buff, or pink chert and, if the story of the discoverer can be credited, were found in a cache with few associations other than a small group burial.

To sum up: Laboratory examination of a large random sample of these flints shows no positive evidence of forgery but rather supports the probability that they are genuine. The occurrence of a similar eccentric at Spiro lends color to this idea although it must be remembered this specimen was found in a dump heap. Likewise the low price at which the pieces were first sold would not seem to make forgery worthwhile. On the other hand, the unsatisfactory circumstances under which these specimens became known, together with the fact that in spite of considerable work, none has yet been found in an undisturbed site or portion of a site renders a definite conclusion as to their authenticity or spuriousness impossible at the present time. They do, however, present a problem which seems worthy of serious investigation and should not be casually dismissed as either fakes or freaks.

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[50] Joyce, T. A., "The 'Eccentric Flints' of Central America," *Journal of the Royal Anthropological Institute*, Vol. 62, 1932, pp. XVII–XXVI, Plates I–VIII.

See also Gann, Thomas, "The Maya Indians of Southern Yucatan and Northern British Honduras," *Bureau of American Ethnology*, Bulletin 64, 1918, pp. 67–68.

A NEW METHOD OF SHERD CLASSIFICATION

ROY WARD DRIER[51]

IN TIMES long before history was recorded in America, a people or peoples mined native copper on the shores of Lake Superior. Every copper-bearing vein mined here by modern man has shown indications of mining by prehistoric man. The copper which the primitives mined, and the artifacts made of the copper, were found by early settlers and explorers of this continent to be distributed throughout the Mississippi Valley and the Northeast.

Indian legends do not mention the miners or the mining operations, which were of sufficient magnitude to deserve inclusion in the records of any modern race. An engineer working at the Minong Mine, near McCargoe Cove on Isle Royale, estimated that the efforts of ten thousand men working for a thousand years were represented in that region. If that statement were discounted ninety per cent, it would still indicate a relative enormousness of numbers and labor and the great antiquity of the operations.

Another phase of the problem, other than the identification of the miners and the date of the mining operations, is the reason for the cessation of the activity. Early prospectors who opened the pits—after it had been concluded that the pits which pock-marked the copper country of northern Michigan, including Isle Royale, were mines rather than natural depressions—stated that the mining tools were found in them, just as though the miners had quit for the day intending to return the next morning, but never did. The miners left no burial or other mounds. An expedition to Isle Royale from the Milwaukee Museum did discover a cave containing several Indian skeletons, but this one find certainly is not representative of a period lasting possibly thousands of years and involving thousands of workers. The early miners left no inscriptions on the permanent features of the country.

It was in an attempt to determine who these miners were that the following work was done. The "who" part of the problem is not as yet solved, but the prosecution of the research has developed a new method of sherd identification which, it is believed, will prove fruitful to the archaeologist.

It was thought that different cultures might have different sources

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for their pottery clays, and different techniques of firing their pottery, and that such differences could be shown in x-ray diffraction patterns and in arc or spark spectra of the sherds. The spectra would indicate the composition and would aid in differentiating clay sources, and the x-ray diffraction patterns would serve to separate different crystalline structures resulting from different methods and temperatures of firing. It was planned to develop an x-ray diffraction pattern library and an arc spectrum library for pottery of the various known cultures and then to compare patterns and spectra of sherds from the copper country with patterns in these libraries.

For the benefit of those who are not familiar with x-ray diffraction and spectrographic methods, the following explanation is included. The arc spectrum is an atomic phenomenon, and in brief consists of a series of wave lengths of light which result when material is heated to the vaporization point, in this case in an electric arc. When these waves are caused to pass through a prism, they are diffracted through different angles, the angles being functions of the wave lengths. Each element has its own characteristic spectrum which is registered as lines on a photographic plate. The positions of the lines in the spectrum indicate the kind of atoms present, and the intensity or density of the lines really indicates the numbers of each kind of atom present. The spectrograph is an excellent tool for both qualitative and quantitative analysis, particularly when an element is present in a very minute concentration.

X-ray diffraction is an atomic phenomenon also. It indicates the arrangements of the atoms in space, which determine the crystal symmetry of the material. The diffraction pattern is produced by the various atomic planes in the crystalline material which reflect a beam of monochromatic x-rays at various angles, the angles in this case being functions of the interplanar distances. Again the pattern is registered on a photographic plate or film and, for sherd investigation, consists of a series of concentric rings or a radial section through the series. The radii of the rings are functions of the interplanar distances, and the order of appearance of the rings is a function of the crystal system. So by means of the spectrograph and the x-ray it is possible to determine the kinds and quantities of atoms present and their arrangement in space.

Sherds of various cultures were obtained from the Milwaukee Public Museum, through the courtesy of W. C. McKern, Curator of Anthropology. Sherds from various sites on Isle Royale were obtained from G. I. Quimby of the Department of Anthropology, University of Michigan. Sherds from the following listed wares were analyzed:

Aztalan Component (Wis.), Middle Mississippi, Utilitarian
Aztalan Component (Wis.), Middle Mississippi, Fine Ware
Aztalan Component (Wis.), Woodland
Shrake Component (Wis.), Upper Mississippi
Raisbeck Component (Wis.), Woodland
Sherds from various sites on Isle Royale (Mich.)

About eighteen sherds from each ware were sampled, and x-ray diffraction patterns and arc spectra obtained of them. Within each group the colors varied from light tan to dark brown, the textures from fine to coarse, and the hardnesses from 2 to more than 5. These conditions precluded the possibility of the sherds all being from the same parent piece of pottery or from several pieces.

Spectrographic analysis indicated that in general the compositions of all the sherds were about the same. The exceptions will be mentioned later. The diffraction patterns showed that the six groups were of three different crystalline natures, and that each of these three was composed of two of the groups (Table I).

TABLE I

	Interplanar Spacings (in Angstrom Units)*	Spacings Present in Sherd Groups					
		A	C	B	AA	E	L
1	4.30	x	x	x	x	x	x
2	3.35	x	x	x	x	x	x
3	3.05	x	x				
4	2.30	x	x				
5	2.10	x	x	x	x		
6	1.93	x	x				
7	1.88	x	x				
8	1.83	x	x	x	x	x	x
9	1.55	x	x	x	x	x	x
10	1.38	x	x	x	x	x	x

* 1 Angstrom Unit = one hundred-millionth of a centimeter.
Groups A and C are alike
Groups B and AA are alike
Groups E and L are alike
A = Aztalan Component, Middle Mississippi, Utilitarian
C = Aztalan Component, Middle Mississippi, Fine Ware
B = Aztalan Component, Woodland
AA = Isle Royale
E = Shrake Component, Upper Mississippi
L = Raisbeck Component, Woodland

The composition differences mentioned above as the exceptions in the spectrograms enabled further separation of each division, except in the case of the Isle Royale sherds and the Woodland variety from Aztalan, which were so similar physically, as well as in composition, that it was concluded that they were of the same culture. In one case the differentiation was based on the presence of small amounts of silver and copper in the sherds of one group and their absence from those of the other physically similar group. The diffraction patterns of the Middle Mississippi (Aztalan) Fine Ware and Utilitarian Ware indicated that the methods of firing were the same, but the arc spectra indicated that the clays came from different sources. The spectrograms showed that the Fine Ware contained copper and silver and that these two elements were missing in the Utilitarian.

The Upper Mississippi and the Woodland were also differentiated by composition: The Upper Mississippi contained silver and calcium (the calcium being due undoubtedly to shell tempering); while the Woodland did not contain silver, nor as great an amount of calcium. The Middle Mississippi sherds were easily differentiated from the Woodland by the difference in crystal structure as indicated by the x-ray diffraction patterns. The Shrake Component and Raisbeck Component sherds had the same crystal structure but could be differentiated by the composition. The sherds from the Shrake Component contained cobalt and the others did not.

Within these groups there were a few exceptions indicated. It was thought that these few exceptions represented sherds of pottery whose presence was due to trading, to inheritance (inter-tribal marriage), or to the finding by one people of lost or discarded pottery of another people.

It might be argued that the composition of an individual clay deposit would vary; that is, that the composition would be different in different parts of the formation. Such an argument might hold for modern-scale operations, but is not likely to be true in the case of the comparatively restricted clay-mining operations of the prehistoric clay-users. The very nature of the deposition of a clay-bearing formation would militate against great variations in the composition, and if one were to find traces of an element in one part of a deposit it would in all probability be found in all of the deposit.

Current research is investigating this question and at the same time compiling a library of spectra of the clays of the north central United States. Such a library will be of interest and value, not only for

the information to be obtained concerning the variations in clay pit compositions but also for its pottery taxonomic value.

Shell remnants were taken from some of the shell-tempered sherds and examined as to their crystal structure. The diffraction patterns of the shells showed the crystal structure to be that of calcium carbonate. Under the conditions which undoubtedly obtained during the firing of the pottery, calcite would calcine at about 850° C., indicating that in general the firing temperatures were below that temperature. The fact that in the diffraction patterns of some sherds there are present lines which are characteristic of crystobalite would indicate that occasionally the firing temperatures rose above 870° C. Crystobalite is a polymorphic transformation product of silica which would form at about 1000° C., under conditions obtaining during the firing.

It is thought that this research opens up new fields, and offers new possibilities, in pottery taxonomy. The use of arc spectra and x-ray diffraction enables the archaeologist to prosecute his work from a different scientific viewpoint and to secure facts which it is impossible to obtain by any other method.

ACKNOWLEDGMENTS

The author wishes to express his appreciation for the generous assistance given by W. C. McKern, of the Milwaukee Public Museum, and Prof. Bart Park and Mr. Frank Fisher of the Michigan College of Mining and Technology.

SOCIETY FOR AMERICAN ARCHAEOLOGY
ANNUAL MEETING—1939

The fourth annual meeting of the Society for American Archaeology was held on May 5th and 6th, 1939, in Ann Arbor, Michigan, in conjunction with the eighteenth annual meeting of the Central Section of the American Anthropological Association. The headquarters for the meeting were in the recently completed Horace H. Rackham School for Graduate Studies.

The fourth annual business meeting of the Society was called to order by William A. Ritchie, late in the afternoon of Friday, May 5th. About thirty-five people were in attendance.

The minutes of the third annual meeting were approved as printed in AMERICAN ANTIQUITY. The report of the Secretary-Treasurer was read and accepted. The report of the Editor was read and accepted. It was then moved, seconded and passed unanimously that "The Society for American Archaeology wishes to express formally its deep appreciation of the services which W. C. McKern, as Editor, has rendered the Society in guiding the journal AMERICAN ANTIQUITY through its formative period. Through his unstinted devotion and sound judgment, this journal has assumed its proper place as one of the well-established scientific periodicals of this country. The Society regrets that Mr. McKern's term of office as Editor has been completed."

Fay-Cooper Cole then presented the report of the nominating committee, offering first the list of nominations for Fellows which had been previously approved by the Council of the Society.

Douglas S. Byers	George Langford
James A. Ford	Sigvald Linné
Neil M. Judd	J. Gilbert McAllister
Arthur R. Kelly	Paul H. Nesbitt
Charles R. Keyes	Malcolm J. Rogers

Henry C. Shetrone

It was moved, seconded, and passed that these Fellows be declared elected. Dr. Cole then presented the slate for officers prepared by the nominating committee as follows:

President: Neil M. Judd
Vice President: Glenn A. Black
Secretary-Treasurer: Carl E. Guthe
Editor: Douglas S. Byers
Council members: Harold S. Colton, Charles R. Keyes

Nominations from the floor were called for. There being none, it was

moved, seconded, and passed that the nominations be closed and the Secretary be instructed to cast a single ballot in the name of the Society for the slate as read. Mr. Ritchie declared the new officers and Fellows duly elected.

Under the heading of new business, the Secretary brought to the attention of the Society a suggestion made by the President, Edgar B. Howard, who deeply regretted that he was unable to be present, concerning the affiliation of the Society with the American Association for the Advancement of Science. After some brief discussion, it was moved, seconded, and passed that the President be instructed to appoint a committee to investigate such affiliation and to report at the next annual meeting. There being no other business to come before the Society, the meeting adjourned shortly before six o'clock.

The sessions of the two organizations held on Friday and Saturday, May 5th and 6th, were devoted largely to the presentation of papers. Approximately 150 individuals were in attendance at these meetings. Because of the number of papers submitted, two simultaneous sessions were held on Friday morning, Friday afternoon, and Saturday morning. Two of these, on Friday and Saturday mornings, were devoted to papers not related to American archaeology. One of the sessions on Friday afternoon consisted of a symposium on ethno-history. The annual dinner was held at the Michigan League on Friday evening, at which Fay-Cooper Cole spoke informally. The evening lecture on the same day was held in the amphitheatre of the Rackham Building. Robert Redfield introduced the speaker, Wendell C. Bennett of the University of Wisconsin, who spoke on "Some Problems of Peruvian Archaeology." One of the most successful sessions, held on Saturday afternoon, was the symposium on archaeological methods led by W. C. McKern. Brief informal statements were made by various members of the Society upon such subjects as petrography, field excavations, analysis of archaeological materials, ceramic technology, pottery classification, culture classification, recording data, and terminology. A list of the archaeological papers presented at the several sessions is appended.

FRIDAY MORNING SESSION

Four Prehistoric Populations of the Middle West (illustrated). Georg K. Neumann

Rambling Comments on the Fort Ancient Aspect and Related Cultures. James B. Griffin

A Geologically Dated Camp Site, Georgian Bay, Ontario.
Part 1—Emerson F. Greenman
Part 2—George M. Stanley

The Pound Village Site, Elgin County, Ontario (illustrated). Philleo Nash
A Cultural Sequence in Illinois. Horace Miner
Prehistoric Drouths in the Mississippi Valley. Florence Hawley Senter

FRIDAY AFTERNOON SESSION

The Glenwood Focus of the Nebraska, (by title). Charles R. Keyes
Two "Woodland" Manifestations in Nebraska (illustrated). Stanley Bartos, Jr.
A Preliminary Report of the Archaeological Remains of the Ponca Indians, (illustrated). Genelle Jenkins
A Late Contact Site of the Oneota Aspect (illustrated). Henry Angelino
A Preliminary Note on the Possible Genesis of the Upper Republican Culture (illustrated). Earl H. Bell
Indian Villages Surrounding the Spiro Mounds, Le Flore County, Oklahoma (illustrated). Kenneth G. Orr
A Hopewell Site in Northeastern Oklahoma. David Baerreis

SATURDAY MORNING SESSION

A carved Stone from d'Arcy, Saskatchewan, (by title). V. A. Vigfusson
Ecological Conditions in New England. Douglas S. Byers
Tentative Correlation between Archaeological Discoveries and Ecological Conditions in New England. Frederick Johnson
Progress of the W.P.A. Archaeological Project in Kentucky (illustrated). John L. Cotter
A Problem of Natural vs. Cultural Strata Solved by Tree-ring and Potsherd Analysis. Donovan Senter
The State-wide Archaeological Survey of Texas. George R. Fox.

CARL E. GUTHE, *Secretary-Treasurer*

REPORT OF THE EDITOR

Volume IV of AMERICAN ANTIQUITY was completed with the April number just released. It contains 402 pages, as compared with 384 pages for Volume III, with a proportionate increase in illustrations. Although this fulfills my promise (made at the last annual meeting) to increase the size of the journal as rapidly as the budget might permit, I fear that in instances the strain on the treasury has been acute. It may be found necessary to curtail further expansion in Volume V.

A new division of the journal, *Facts and Comments*, was initiated in this volume. It has served to take care of a variety of short articles and comments which either were not exactly suited to run as major articles or were of a character requiring more immediate release than formerly would have been possible. The extent to which this division is being used would seem to justify its creation.

The NOTEBOOK series has finally made its appearance, and releases

probably will be made each month of the next fiscal year, excepting those months in which AMERICAN ANTIQUITY is issued. A considerable quantity of material for the NOTEBOOK is accumulating, and comments which have come to the Secretary-Treasurer and me indicate that this new medium threatens to equal if not surpass the regular journal in popularity.

As my four-year term of office expires at this time, I wish to make use of this occasion to express my gratitude to the Secretary-Treasurer and his Secretary, the Associate Editor, and the Assistant Editors who have contributed so faithfully of their time and efforts toward easing the burden of the Editor; and to the contributing authors whose considerate cooperation is greatly appreciated. May I urge all who may have contacts with the new Editor to extend to him the same high order of helpful assistance.

Respectfully submitted
W. C. MCKERN, *Editor*

REPORT OF THE SECRETARY

The third annual meeting of the Society was held in conjunction with those of the Central Section of the American Anthropological Association in Milwaukee on May 13 and 14, 1938. The minutes of this meeting were printed in AMERICAN ANTIQUITY, Volume IV, No. 1 (July, 1938), pp. 41–47.

During this period, the increase in the membership has been substantial, but neither as great as the year before, nor as great as hoped for. A continued effort on the part of the Fellows and Affiliates to assist in the growth of the Society is needed. The changes in membership in terms of classes are given in the following table.

	May 1 1938	With-drawn	Trans-ferred	Added	May 2 1939
Life Fellows and Affiliates	8	–	–	1	9
Fellows	45	−2	17	–	60
Affiliates	666	−59	−17	132	722
Institutional Members	67	−1	–	29	95
	786	−62		162	886

The following items are included under the heading "Withdrawn." During the year the Society lost by death two Fellows; W. K. Moorehead, and J. E. Pearce, and one Affiliate, Mrs. Ernestine Singer. At the beginning of this fiscal year twenty-seven Affiliates were dropped from the rolls for being two years in arrears in payment of dues. Fifteen

Affiliates have resigned, and sixteen others have failed to notify this office of their change of address, and are therefore out of touch with the Society. One Institutional Member has dropped its subscription.

During the winter, final preparations were made, with the approval and advice of the Editor and the other officers of the Society, for the inauguration of the Notebook of the Society, a mimeographed series of pages on punched $8\frac{1}{2}\times11$ sheets. The first pages were distributed from the office of the Secretary-Treasurer in February. To date a total of forty-eight pages have been sent out.

Several actions were taken by the Council during the course of the past year. In the summer, in accord with the decision reached at the last annual meeting of the Society, it approved the appointment of Douglas S. Byers as Associate Editor to assist Mr. McKern. Early in the fall, the Council authorized the holding of a regional meeting in New York City on December 27–30, 1938, in connection with the annual meetings of the American Anthropological Association. Late in the fall, the George Banta Publishing Company, publishers of AMERICAN ANTIQUITY, requested the Editor to make some disposal of the cuts used in the back volumes of the journal. Upon the recommendation of the Editor and the Secretary-Treasurer, the Council authorized that these cuts be transferred from Menasha, Wisconsin, to the office of the Secretary-Treasurer. Last month (April), the members of the Council voted upon nominations for Fellows in the Society.

In the fall, the President, Dr. Edgar B. Howard, appointed a program committee, consisting of Drs. Linton and Roberts, to cooperate with the program committee of the American Anthropological Association in preparing for the Christmas meetings. During the spring, the President appointed two committees to serve in connection with the fourth annual meeting of the Society in Ann Arbor. The first was a nominating committee; Arthur C. Parker, chairman, Fay-Cooper Cole, and George C. Vaillant. The second was a program committee; E. F. Greenman, chairman, Paul S. Martin, and Glenn Black.

Respectfully submitted,
CARL E. GUTHE, *Secretary-Treasurer*

REPORT OF THE TREASURER

The present balance (May 2, 1939) of the Society stands as follows:

Regular Fund	$233.32
Permanent Life Membership Fund	469.13

REGULAR FUND

Gross Receipts

Balance on hand, May 1, 1938		$ 770.44
Dues:		
1937–38	$ 99.00	

1938–39	$1764.75	
1939–40	66.00	$1929.75
Sales of volumes I, II, and III of AMERICAN ANTIQUITY	147.00	
Sales of extra copies of AMERICAN ANTIQUITY	7.75	154.75
Reimbursements (Reprints and illustrations)		220.23
		$3075.17

Gross Disbursements

AMERICAN ANTIQUITY		
Printing, illustrating and distribution	$2033.72	
Reprints	181.79	$2215.51
THE NOTEBOOK		
Supplies (February and March)	90.70	
Postage (February, March, and April)	81.25	171.95
Stationery and printing		40.49
Postage, telegrams, and express		81.74
Secretarial assistance		300.00
Bank Service charges		18.94
Discounts to subscription agencies		13.22
Cash on hand, May 2, 1939		233.32
		$3075.17

Resources

Cash on hand, May 2, 1939	$ 233.32
Due from 1937–38 dues	141.00
Due from 1938–39 dues	528.00
Due from reimbursements	36.72
	$ 939.04

Liabilities

Dues for 1939–40 already paid	$ 66.00
May NOTEBOOK supplies (bills not yet submitted)	?
AMERICAN ANTIQUITY, Vol. IV, No. 4 (bills not yet submitted)	?

PERMANENT FUND

Receipts

Balance, May 1, 1938	$ 412.55
Dues from one Life Affiliate	50.00
Accrued interest	6.58
	$ 469.13

Disbursements

None	$ 000.00
Balance on hand, May 2, 1939	469.13

Respectfully submitted
CARL E. GUTHE, *Treasurer*

FACTS AND COMMENTS

SOME "PALAEOLITHIC" END-SCRAPERS FROM SOUTHERN OKLAHOMA

During the course of a survey of surface manifestations in the region of Platt National Park, Oklahoma, the writer's attention was called to the distinctive form of scraper occurring in sites between Buckhorn and Oil Creek, streams heading four and eight miles south of the Park, respectively.

The two creeks are outlets of underground waters from the numerous caves of that locality. The waters are clear, cold and palatable, and the banks of the creeks were favorite locations for camps of prehistoric peoples, if one can judge

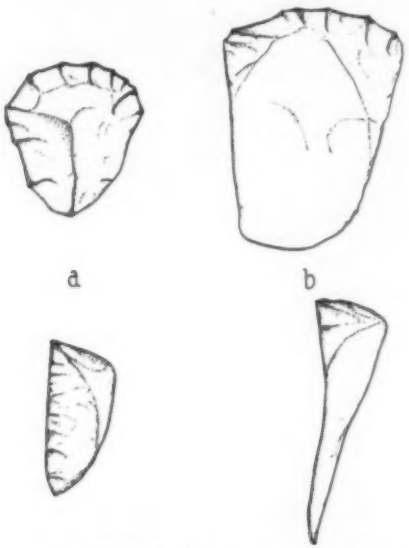

FIG. 2.—*a*. Round-nosed scraper, False Washita River, Wynnewood, Okla. *b*.—End scraper, Buckhorn Creek, Murray County, Okla. (Both full size.)

by the thousands of flint chips that cover the surface. The streams empty within twelve miles into the False Washita, a river whose geological history goes far back into Palaeozoic times.

The scrapers are of a fine-textured flint, reddish in color and of rock uncommon to the region. The prevailing stone is white to blue and more coarse than the previously mentioned form. This statement is made on the basis of present studies which are by no means complete. The end-scrapers are identical

in detail to those described by Nelson[52] as coming from the grounds of the University of Alaska, Fairbanks, Alaska. Suitable flakes are utilized and the thicker, broader end sharpened or rounded off by retouching to make a serviceable instrument.

Like Dr. Nelson, the writer is reminded of Old World forms of end-scrapers, especially those of the Mousterian. Chipping is on one side only and limited to the used edge.

The end-scraper appears reminiscent of the round-nosed scraper found in villages of other early nomadic people. Here, chips were utilized, mainly the subtriangular forms which had a much-thickened, convex end. The entire surface of one side was dressed with percussion flaking. Villages containing such forms of scrapers occur within a few miles upstream on the Washita. It is doubtful if a relation exists between the two types of artifacts but it affords a problem that might later be solved through further studies of the region.

The writer would like to offer the occurrence of the Oklahoma end-scraper as a case of parallelism in a rather insignificant factor. Due caution should be exercised in interpretation of such factors.

H. R. ANTLE
Sulphur, Oklahoma

THE CLOVIS FINDS ARE NOT TWO MILLION YEARS OLD

In the October issue of this publication, Mr. Frank Bryan, geologist of the Seaboard Oil Corporation of Dallas, Texas, gives a new interpretation of the age of the associated archaeological and paleontological discoveries made at the gravel pit, between Clovis and Portales, New Mexico. In doing this he takes pointed exception to the interpretations already published. There cannot be the slightest objection to such a difference of opinion, but it can be sincerely questioned whether he is justified in making such a statement as the following, which appears in the opening paragraphs of his article: "We have, as a matter of fact, conservative archaeological field work being explained by a slipshod attempt at geological radicalism."

In reply to this statement it can be categorically denied that the geological work carried on in connection with the excavation at the gravel pit was either slipshod or radical. The greatest pains were taken to bring every bit of evidence of whatever nature to bear on the problem as here presented, and to secure recognized and conservative geological opinion, based on personal observation while the work was in progress.[53] With this in mind Dr. John C. Merriam, President Emeritus of the Carnegie Institution of Washington, who visited the site, bringing with him several outstanding scientists, made it possible for Dr. Ernst Antevs, and Dr. Chester Stock to study the site and to make independent reports upon it.[54] The latter, together with Dr. Bode and two assistants came

[52] Nelson, N. C. Notes on Cultural Relations Between Asia and America., AMERICAN ANTIQUITY, Vol. 2, No. 4, p. 258.

[53] Howard, 1935; Cotter, 1937.

[54] Antevs, 1935; Stock, 1936.

from California Institute of Technology and spent the summer of 1933 at the gravel pit with the writer. Levels were run out by Dr. Bode and his assistants, and detailed maps made of the gravel pit and one of the other nearby basins. The following summer Dr. Antevs spent the summer there and in company with the writer visited the regions to the east and southeast as far as Abilene, Texas, and Frederick, Oklahoma; to the west of Clovis as far as the mountains, and north to the Folsom site. This embraced a larger study of the geology and archaeology of that region for the purpose of correlation.

Special studies were made on the site and, afterwards, in the laboratory by A. W. Postel, of the University of Pennsylvania, in analyzing the sands, silts, and gravels to determine the origin and character of the unconsolidated materials.[55] Dr. Henry A. Pilsbry, of the Academy of Natural Sciences, leading authority in the country on molluscs, made a study of the invertebrates from here.[56] Dr. Kenneth E. Lohman[57] of the United States Geological Survey, and Dr. Ruth Patrick, of the Academy of Natural Sciences, made independent studies of the diatoms from the deposits.[58] Dr. R. W. Chaney of the University of California examined and reported upon the charcoal fragments[59] and Dr. Paul Sears, of the University of Oklahoma, analyzed the pollen grains.[60] Many other archaeologists, paleontologists, and geologists visited the area at the time the work was going on there from the end of the summer of 1932 to 1937, with the exception of the summer of 1935 when the writer was in Russia. Therefore, contrary to Bryan's statement, everything was done to secure *all* the data possible, not only of a geological nature, but of every other kind that would throw light upon the problem. In all fairness, can that be called slipshod?

Let us go a little further and see to what all this evidence pointed. The invertebrates found in the blue sands contained a number of species which still live in New Mexico and others which are extinct in that region. Without going into detail, it can be noted that Dr. Pilsbry was led to conclude that the deposits date from Pleistocene time. On the basis of a study of the diatoms of these same deposits, Dr. Lohman states that a late age is indicated, possibly late Pleistocene or early Recent. The results of Dr. Patrick's studies support Lohman's conclusions that the diatoms noted from the blue silt strata indicated an increase in the salt concentration of the water as the samples progressed up through the various layers. Starting at the speckled sand which underlies the blue silt on the west side of the pit, Dr. Patrick states that the common occurrence of certain forms indicates lakes or ponds, or, at least, that the water conditions in which the diatoms lived were devoid of swift currents. In the lower

[55] Howard, 1935, p. 86.
[56] Howard, 1935, p. 89.
[57] Howard, 1935, p. 86.
[58] Patrick, 1938.
[59] Howard, 1935, p. 90.
[60] Howard, 1935, p. 88.

level of the blue silts, which is the richest in diatom flora, the forms appear to be largely littoral ones, found most frequently in pools, lakes, and stagnant water. A sample taken from material in which some of the mammoth bones were embedded contained forms typically found in ponds, pools and quiet water, and was the only layer in which sponge spicules were fairly abundant. The middle layer of the blue silts, according to Dr. Patrick represents a transitional layer, indicating a change from fresh water to one of a higher salt content. The upper layer of the blue silt has a diatom flora that indicates water of a relatively high salt content. In the brown sand above, the diatom flora disappears.

Dr. Chaney's report on the wood fragments sent to him for examination, which were taken from one of the hearths, in place in the blue silts of "Anderson Lake," showed two genera, upon which he concluded that the climate at Clovis during which these fragments were accumulated, was similar to that in the colder, Transition to Boreal localities.

The vertebrate paleontology was studied by Dr. Stock, who includes in his report a study of the geology of the area, covering some eighty square miles. The evidence presented by the vertebrate remains from this locality is entirely consistent with that from many other sites in the Southwest and in other parts of the country, the age of which is best estimated as late Pleistocene or early Recent. Some paleontologists see quite a late survival for such forms of this faunal assemblage as the ground sloth, mammoth, and camel, placing them well into the Recent period. The animal bones from this region show no fossilization such as may be found in those from late Pliocene deposits. Dr. Stock summarizes the field characteristics of the blue sands in which the vertebrates are found, covering the conditions of accumulation of the blue sand and the mode of accumulation of the vertebrate remains therein. He states:[61]

"Since the basins were formed more or less at random and since the formation of the basins is in no way controlled by the underlying Blue Sand, the probability that the Blue Sand underlies the entire area studied within Black Water Draw seems justifiable. The identical character of the Blue Sand at all localities where it is exposed indicates that this stratum is a blanket deposit which accumulated under uniform conditions either in one or in a few large and connected areas.

"In this fine-grained deposit, the presence of diatoms and the faunal change exhibited by them, the horizontal stratification of the sediments, the absence of cross-bedding, the uniform thickness, the rather constant ratio of occurrence of the various constituent minerals, the shape of the constituent particles and the abundance of the vertebrate material, all point toward an accumulation taking place under a lacustrine environment. Fluviatile silts and clays are usually characterized by poor sorting of the material and the beds are rarely continuous for long distances along the strike, since the sediments change

[61] Stock, 1936, p. 231.

rapidly in both vertical and lateral directions. In addition, the uniform thickness (rarely varying by more than a foot from an average of five feet) of the Blue Sand is hardly in accord with the general character of stream deposits."

In addition to the vertebrates Stock finds that the stratigraphic and physiographic relations of the blue sands to the present landscape furnish some suggestions as to the age of the deposits, which he dates back to a period when the rainfall was greater than it is today, but which he states does not necessarily fall into Pleistocene time.

Dr. Antevs' study of the problem took in a much larger area geologically. Being convinced that the blue silt deposits were laid down at a time when the climate was cooler and more moist than it is today, Antevs considered the evidence for this from the point of view of mountain glaciers, lakes and stream terraces, with particular emphasis on the first two. Investigation of mountain glaciers took in the Sangre de Cristo Range and the mountains west of Roswell. Investigation of lakes that might have some bearing on the problem at Clovis covered particularly the ancient Lake Estancia, 160 miles west of Clovis. In his published conclusions Antevs states:[62] "The blue clays containing the artifacts in association with bones of mammoth and extinct bison were deposited in lakes which undoubtedly belonged to the Brazos River system then extending northwestward to the vicinity of the cuesta which forms the western margin of the Llano Estacado. The beds in the clays indicate fluctuations of the water level, as do the several shorelines of Pluvial Lake Estancia. The artifacts probably sank a little in the soft clay, but their occurrence at a depth of 17 inches suggests burial before the clay deposition had come to an end, or 13,000 to 12,000 years before our time."

All this evidence arrived at by special independent studies as well as painstaking investigation, covering several years, on the ground, points in the same direction: that the blue sands at Clovis represent deposits of comparatively recent age, which applies as well to the included animal bones and artifacts. Neither the geological nor the paleontological evidence shows any indication whatever that these deposits are of any great antiquity, certainly not 2,000,000 years as Bryan estimates.

What of the archaeological evidence which is just as much a part of the whole picture as that already considered? Placing such an age as 2,000,000 years upon artifacts of the Folsom-Yuma complex is inconsistent with the knowledge gained through archaeology the world over. All of this knowledge, so painstakingly built up over many years, in the cave districts of France and Spain, in the deep deposits along the Somme terraces, in England and Germany, in Central Europe, North Africa, the Near East, and the Far East, would have to be scrapped if it were accepted that Folsom man had lived in North America as long ago as 2,000,000 years. We think this entirely unlikely. Folsom and Yuma artifacts themselves exhibit no primitive characteristics; on the con-

[62] Antevs, 1935, p. 311.

trary they indicate a highly developed skill that can be compared best with types of the Danish and Egyptian Neolithic. There is evidence of sand-blasting by the wind on the surface of many Folsom and Yuma artifacts. Some of them have a patination and others have a calcareous encrustation, but no satisfactory method has been devised to establish age based on such particular chemical or mechanical weathering. There is no marked rounding of the flaked scars on any of these tools, such as is readily observed on those from the lower cultural levels of Europe, Asia, or Africa.

Few geologists assign to the Pleistocene as much as 2,000,000 years. As a matter of fact most geologists of the country today give the Pleistocene just half that duration.[63] The latest time estimates that I have seen, correlating the Pleistocene of Europe, cover a period of 590,000 years, beginning with the Günz glacial, and 982,000 years going back to a pre-Günz period.[64] Most American students of the Pleistocene estimate its beginning at approximately 1,000,000 years ago, although a few have estimated it at less, and still fewer at more. It is difficult, if not impossible, to establish an absolute chronology. A relative one will have to suffice. However, in relation to an age of even 1,000,000 years for the Pleistocene, the time factor represented by our Folsom and Yuma artifacts will not be more than one-fiftieth of such duration.

Anthropologists place the earliest known human remains in the first third of the Pleistocene, although there has been a tendency in recent years to shorten this time and bring it up nearer to middle Pleistocene.[65] It is true that some European prehistorians have put man back as far as the end of the Tertiary, based on the discovery of eoliths from England, France and other parts of the Continent, but no human skeletal remains have been discovered for which a date earlier than the Pleistocene can be claimed. These earliest people had simple tools, and many thousands of years elapsed before the flaking industry reached the perfection of the European Neolithic. How are we to believe, then, that a people who made such finely flaked tools as our Folsom and Yuma types, lived in America at a time when everywhere else in the world man was at the threshold of his existence as a recognizable human being, and was just learning to master the simplest core techniques?

Something is wrong somewhere with Bryan's view of the problem. Can it be that his assumption is incorrect, that the blue silt deposits are to be correlated with the time that the Pecos River robbed the Brazos drainage, or that the rate of erosion of the Pecos valley, at the point of piracy was as rapid as he estimates, which, after all, he admits is only an assumption? Is he correct in referring to all the gravels, sands, and silts at the gravel pit as river deposits? There has never been any question that the *gravels* and *sands* underlying the blue silts were river sands; but what about the marls on the east side of the

[63] Daly, 1934; Kay, 1931; Pirsson, 1924; Leverett, 1930; Chamberlin, 1906.
[64] Zeuner, 1938.
[65] Hooton, 1931; MacCurdy, 1937.

gravel pit, just below the blue silts, and the blue silts themselves, which indicate definite fluctuations? All the evidence points to these deposits having been laid down in quiet, shallow waters. Sellards[66] points out, after a study of the exposed sections of the gravel pit, that "an unconformity exists on the east side of the pit, which is important as proof of a time interval, separating the beds carrying fossils from the sands and gravel below." Failure on Bryan's part to recognize that the bone-bearing stratum represents a changing environment as compared to the underlying gravels and sands may account, in large measure, for the great antiquity he has placed upon the Clovis finds.

Bryan objects emphatically to the use of the word "lakes" for these low places along Black Water Draw. Perhaps he is justified in this from a strict geological interpretation. Stock also objected to the writer's using the word for what he pointed out should be called basins. All over the High Plains, however, where water stands in any kind of a shallow depression, the local residents use the word "lake" to describe these depressions. It may be that where so little water stands anywhere in that region, even a pond looks like a lake. In the region near Clovis, where relatively few trees grow, the word "forest" is used to designate a clump of cottonwoods. So perhaps we have fallen into the same tendency to exaggerate. Bryan states that neither Antevs nor the writer has attempted to outline the size of our "lakes," and that no lake could have stood in the area under consideration because there would have been no eastern rim to hold the water. In this case he is assuming a large lake, whereas we have been picturing a series of small ones such as actually exist today, within a few miles of the gravel pit, and which held water even during the recent drought period when we were working there.

There is no reference to any large lake having existed at the gravel pit. In fact, we have already quoted Antevs' conclusions which speak for themselves. The writer, in his detailed report of the gravel pit, has made the following statements:[67] "Between the towns of Clovis and Portales, a distance of about eighteen miles by the highway and running in a general east-south-east direction are a series of shallow dry basins, resembling old lake beds, which may be the remnants of a once larger drainage system. Udden points out that the Brazos River once headed in the eastern flanks of the New Mexico Mountains." In the same publication appears "All the evidence points to a former period of greater precipitation than the present, and a more or less gradual drying up, during the process forming a chain of shallow lakes that in the course of time became water-holes and finally dried up altogether, probably before any white settlers arrived on the scene. Since the drying-up process of these basins, many of them have undergone erosion, chiefly by the wind, which has whipped up the sand into dunes, mostly along the north-east borders." It is not necessary to quote further to show that what the writer was trying to convey was a series

[66] Sellards, 1938.

[67] Howard, 1935, p. 79.

of lakes, ponds, water holes, shallow basins, or whatever is a more suitable word to hypothesize places in a former drainage system where water once stood and where the evidence of a fluctuating water table and the work of the wind were the controlling factors.

As one geologist, who has thoroughly studied the High Plains regions, has expressed himself with reference to our published reports; it is his opinion that neither Antevs nor the writer has presupposed any large lake. On the contrary, his impression was that we had hypothesized small water holes such as would be found today in Portales Valley proper if the water table was twenty feet or so higher, and such as we do have at present at Portales Springs, Big and Little Salt Lakes, and many comparatively small lakes in Texas along the course of the valley.[68] Theis, to whom the writer has just referred, gives us the most recent and up-to-date report[69] on Roosevelt County, N. M., where the gravel pit is located. He does not agree with Bryan's interpretation that great quantities of rainfall join the ground water in Portales Valley. In a recent report[70] he shows that there is very good evidence that the total average annual recharge over the Plains as a whole and in Portales Valley itself must be less than one-half inch, instead of the several inches implied by Bryan. Referring to the region, Theis says:[69] "The surface of Roosevelt and Curry Counties is characterized primarily by its smoothness. The only irregularities are those due to a few valleys which traverse the area, many dry lakes and playas, and sand and silt dunes." . . . "The valleys of the area here considered follow the general slope of the upland surface." . . . "The longest and best developed of these is Portales Valley, extending south-southeast through Portales." . . . "The gradient of the valley is very gentle. Directly south of Melrose the valley has an elevation of about 4,150 feet (barometric), whereas at Portales its elevation is about 4,000 feet, a difference of 150 feet in 21 miles, or about 7.5 feet to the mile." . . . "Along the axis of the valley southeastward from Portales, the low areas are occupied by playas, salt lakes, and salt-grass flats. Similar groups of lakes and salt-grass flats occur south of Melrose, and one, Lake Tierra Blanca, near Floyd." Referring to the lakes and surface depressions of the High Plains: "A very noteworthy feature of all the large lakes consists of deposits of fine silt on the eastern and southeastern edges of the lake beds. This material is massive and structureless and is evidently of eolian origin."

Here then we have an independent report made by a reliable investigator of the area under discussion which gives a complete picture with excellent map of the hydrologic features of Black Water Draw, which in no way refutes the geological interpretations of the area near the gravel pit given by us. It seems

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[68] Theis, 1939.
[69] Theis, 1932.
[70] Theis, 1937, 1939.

unnecessary in view of this report to give further references, but it will be of interest to note that earlier interpretations dealing with the physiography and ground water of the High Planes also recognize the existence of lakes and basins and shallow depressions throughout the area.[71]

In conclusion, then, it seems necessary to clear the record so far as the discoveries at Clovis are concerned. Neither the archaeological evidence, the geological evidence, nor the paleontological evidence shows any such antiquity as 2,000,000 years for the finds there. On the contrary, everything points to a comparatively recent date and nothing has arisen in the meantime to make it necessary to accept an age greater than that given by Antevs of approximately 12,000 years.

EDGAR B. HOWARD
University Museum
Philadelphia, Pennsylvania

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[71] Johnson, 1901; Gould, 1907; Baker, 1915; Udden, 1916; Meinzer, 1923.

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THE WICCOMISS INDIANS OF MARYLAND, PART II[72]

The Wiccomiss Indians, from the very first, seem to have been in bad odor with the Maryland authorities. No treaty of peace was ever made with them by Maryland. In 1642, together with the Nanticokes and Susquehannocks, they were declared to be enemies of the Province.[73] The same year, this proclamation was revoked as far as it concerned the Nanticokes, but remained in force regarding the others.[74] In 1647, Maryland sent a punitive expedition,

[72] Part I appeared in this series, Vol. 4, No. 2, pp. 146–152.
[73] Maryland Archives, Vol. 111, p. 116.
[74] *Ibid.*, p. 129.

under Captain John Price, against "ye Townes & Plantacons of ye Indians of Nanticoke & Wicomick . . . lying to ye eastward of this Province." Captain Price had orders to destroy these Indians " . . . eyther by killing them, taking them prisoners, burning their houses, destroying their corne or by any other meanes."[75] Their final ordeal, however, did not arrive until the year 1667. It came as a result of the murder of an English officer, Captain John Odber, which the Indians justified on the ground that one of their women had been killed by the English. This "war" between the Maryland Government and the Wiccomiss Indians lasted more than two years. Accounts of its causes and prosecution from the white man's point of view will be found in the third and fifth volumes of the Maryland Archives. Wiccomiss prisoners, taken in this war, are said to have been sold as slaves in Barbadoes.[76] The Maryland authorities enlisted the services of the Nanticokes, the Choptanks and the Assateagues in their conflict with the Wiccomiss Indians.[77] In 1667, at the outbreak of the war, the authorities proposed to raise four hundred and fifty men in order to begin hostilities.[78] While Philip Calvert was commander-in-chief of these forces,[79] the man who led the expedition seems to have been Captain (later Colonel) Philemon Lloyd.[80] This fact, as we shall presently see, is of interest because of what his son, Hon. Philemon Lloyd, tells us about the conflict. The latter, writing to Lord Baltimore, September 10, 1722, from New Castle, tells about a visit he had recently paid to the Indian town of Conestoga, where he was disappointed to find that the chief of the place was absent: "I was informed yt Cap Civility ye Sachem of yt Poeple & ye grandson of a former Civility[81] who had been very Humane & servicable to ye English in ye Wiccomiss war anno 1678—was gone a days march into ye country."[82] Lloyd must have referred to the war of 1667–8, about which, as we shall see later, he wrote to Lord Baltimore at some length. And so, it appears, the Susquehannocks also aided the English against the unfortunate Wiccomiss.

In the month of May, 1669, at the trial of one Anatchcom, alias Winancon, a Wiccomiss Indian accused of being the murderer of Captain Odber (the good captain had been dead two years and the guilty party had just been apprehended, so it seems), the accused testified that his people "lived a small days Journey from the head of Nanticoke River." This, of course, was after two years of war and of hot pursuit.[83] In a letter addressed to Lord Baltimore and

[75] *Ibid.*, p. 191.
[76] Maryland Archives, Vol. V, p. 136.
[77] *Ibid.*, Vol. XI, p. 196; Vol. V, p. 29; Vol. IV, p. 170.
[78] *Ibid.*, Vol. XI, p. 21.
[79] *Ibid.*, Vol. XI, p. 12.
[80] *Ibid.*, Vol. XI, p. 35.
[81] This earlier Civility is rarely mentioned. Mention of him will be found, however, in Maryland Archives, Vol. III, at page 498 (anno 1664).
[82] Dulany Papers, Maryland Historical Society.
[83] Maryland Archives, Vol. XI, p. 195.

dated at Wye River in Maryland, February 18th, 1721, the Hon. Philemon Lloyd thus describes the Wiccomiss war.[84]

"Among us an Indian Warr ushered in by ye barbarous murther of severall Inhabitants of ye parts where I now dwell was begun in ye year 1667 and brought to an end by ye defeat and totall destruction of a nation of salvages called ye Wiccomises our Poeple were Obliged to pursue them into ye forest and to hunt them out of their fastnesses (w:ch are branches Pocosons and other unpassable places for horse) by ye assistance of our Confiderate Indians a View of w:ch places your Lordpp may have, if you please to give yrself the Trouble of looking into ye map of Maryland and there upon the Lands yt lye between ye Head Branches of Choptank Nanticoke Wiccocomico and to the Northward those Issueing out of Delaware Bay."

Mr. Lloyd goes on to relate how his father, the war ended, engaged fifteen of his troopers to accompany him to the Whorekills, which place he reached in the year 1670, after traversing an uninhabited country of swamps and bogs.

The above recited evidences indicate a wide extent for the lands and habitations of the Wiccomiss Indians. Whether originally all or most of them lived on tidal rivers near Chesapeake Bay, and whether the swampy sources of the rivers mentioned in Lloyd's letter were places of refuge, or were part of their original home, we can not tell. Certainly they had one place of residence where we should least expect to find it, between the towns of the Choptanks and those of the Nanticokes: Chicacone Town on the Nanticoke River.

On May 1, 1668, articles of peace were concluded between Lord Baltimore and Unnacokassimmon, Emperor of Nanticoke.[85] It was thereby agreed that the said emperor "shall delivr up the whole nacon of Wiccomisses and all those Indians that protected the Murderers of Cap.t Odber that lived at Sicacone Towne." On June 16th of the same year Lord Baltimore made a treaty with the Assateagues, in which the same clause concerning the Wiccomiss Indians was introduced.[86] In 1677 certain Wiccomiss Indians "who had some time lived with the Nanticokes" were accused of abducting English children.[87]

In 1725, the Maryland Assembly inquired into the title of the Choptank and Nanticoke Indians to their lands. Regarding Chicacone Town it was ascertained that the Nanticokes "together with the Wicocomisses their subjects" had inhabited about Chicacone Creek since 1668, "but how many years before that time we are not able to discover." It was recorded that the Nanticokes were "not unsettled ubiquitarians," and it was ascertained that, in 1698, the Assembly had granted them a reservation at Chicacone "in consequence only of the Indian habitation at that place for many ages as far as we can tell." It was recalled, that, in 1668, the Emperor of Nanticoke was summoned "to de-

[84] Dulany Papers, Box 4, Maryland Historical Society.
[85] Maryland Archives, Vol. V, p. 29.
[86] *Ibid.*, Vol. XV, p. 170.
[87] *Ibid.*, Vol. XV, p. 147.

liver up the whole nation of the Wiccomisses at Siccacoan Town." "This Wiccomiss town appears to have been tributary to the Nanticoke Emperor who either lived at the same place in a Distinct town as usual amongst those people or in the parts adjacent thereunto for in the same year either by the assistance or conivance of the said Emperor the Canton of the Wiccomise Nation was wholly exterpated after which time it is very reasonable to believe that Unnacokasimmon and his subjects & confederate Indians mixed with them and remained sole masters and possessors of that town and the adjacent parts upon Nanticoke River as a reserve made by the Government to the nation."[88]

Contemporary evidence that the Emperor of Nanticoke resided at Chicacone town is not lacking. In the year 1677 a military rendezvous was appointed at Chicacone "being the place where the Emperor now doth or lately did reside."[89]

Chicacone Creek empties into the west side of Nanticoke River about three quarters of a mile above the modern town of Vienna. The reservation set aside for the Nanticoke Indians occupied the land between this creek and the river, or its principal branch, Marshy Hope Creek. Provision for this reservation was made by Lord Baltimore in 1684;[90] but it was not until October 20, 1698, that an Act of Assembly confirmed the title and defined the bounds.[91] A plat of this reservation, as it was resurveyed April 12, 1783, is in the possession of the Maryland Historical Society. The Indian inhabitants of these lands had departed and it was the intention of the State to sell off the reservation in lots. The reservation extended the whole length of Chicacone Creek, and from the head of this creek to Marshy Hope Creek at a place about a mile below Crotcher's Ferry (Brookview).

Somewhere within the bounds of this Indian reserve was the site of the old Wiccomiss town. The land records of those parts contain several reminders of the presence of the Wiccomiss Indians in that neighborhood:

On January 3rd, 1683, there was surveyed for John Gladstone a tract of land called "Gladstone's Delight," "lying at the head of Nanticoke River on the south west side of the westermost branch of Checacone Creek that divideth the Wiccomiss Neck of land opposite to the Wiccomiss old fields."[92]

On January 6, 1713, a certain Eleanor Ennalls took up a tract of land called "Venture," lying in Dorchester County, "beginning at a marked white oak standing at the head of a North branch that issueth out of the Wickamiss branch that Issueth out of the North side of Chickacone Creek by the said branch."[93]

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[88] *Ibid.*, Vol. XXXV, p. 268.
[89] *Ibid.*, Vol. XV, p. 142.
[90] Land Office, Annapolis, Maryland, Council Book for Lands, 1683–1684, p. 90.
[91] Maryland Archives, Vol. XXII, p. 278.
[92] State Land Office, Annapolis, Maryland, Patents, Liber XXII, folio 112.
[93] Patents, Liber E. E. No. 6, folio 235.

On April 17th, Robert Jones took up a tract of land called "Machthacntawakin," situated in Dorchester County, "beginning at a bounded gum standing by a swamp side near the old Wickamiss path which passeth from the head of Wiccomacoe to Cabbin branch, it being the original beginning tree of Westminister, lying on the north side of Chiccanacomoe River in the woods."[94]

"Westminister" was surveyed for John Newton, March 10, 1681, and lies "on the north side of Chicanacomoco branch between the branches of Transquakin & the said River."[95]

On January 1, 1689/90, Robert Thornwell of Dorchester County, conveyed to Samuel Bramble, "all that tract or devident of Land (scituate, Lying) and being near hardswamps town by the Wiccamess path (called and k)nowne by the name of Robinhoods Well."[96]

The Transquaking and Chicamocomico Rivers rise between the Nanticoke and the Choptank. As tidal rivers they unite and flow into Fishing Bay. Cabin Creek (still so called) is a branch of Choptank River above the head of the Transquaking. Hardswamps Town was one of the towns of the Choptank Indians, and was probably situated on the head of Secretary Creek, or Warwick River, the next large creek below Cabin Creek. How an Indian path got from the head of Wicomico River to Cabin Creek, crossing the Transquaking, and the Chicamocomico, on its way, we must suppose, by Chicacone Town, is hard to explain. Marshy Hope Creek was forded at Crotcher's Ferry (Brookview), but the Nanticoke proper was forded away up among its freshwater sources. The "wading Place" of Broad Creek, one of its principal branches was very near the site of Laurel, Delaware. The "wading place" of Deep Creek, which makes into the Nanticoke a short distance above the town of Seaford, Delaware, was not far above the mouth of that creek. It is likely that the main branch of the Nanticoke was forded at no great distance above the mouth of Deep Creek. The river was formerly navigable as far as Seaford.

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DIRECTIONS FOR THE OBTAINING OF BONE SAMPLES FOR BLOOD-GROUP TESTS

A. MATERIAL

1. Prehistoric horizons are preferable, so that the possibility of admixture is avoided.
2. Material should be of known racial origins, or at least tentatively labelled.
3. The specimens selected should all be of the same culture level, and when possible, from the same or associated sites.

[94] *Ibid.*, folio 92.
[95] Patents, Liber XXI, folio 399.
[96] Dorchester County Land Records, Deeds, No. 4½, 1689–1692, folio 3.

B. SAMPLES. These can be prepared at the time of accession, and stored until tested.

1. Bones which are to be used for blood-group tests should not be washed, but instead cleaned by brushing or any dry method.
2. No preservatives should be used. Bones which have already been treated with ambroid, shellac or polymerized vinyl acetate may nevertheless be utilized provided the preservative has not penetrated into the cancellous portion of the bone.
3. Only intact bones should be used as a source of samples.
4. It is preferable, but not mandatory, that bones be not too badly weathered, as evidenced by marked porosity.
5. As far as possible, bones should be chosen from individuals whose cranial index is available.
6. The *ends* of the long bones, or if these are needed for morphological studies, the lumbar vertebrae are the best sources of cancellous bone. A sample may be made up of bone from various sites in the skeleton, provided, of course, that bones from more than one individual are not accidently included.
7. The surface of the bone should be clean and dry; the instrument used should be wiped with alcohol and dried before each boring.
8. An ordinary bone curette can be used to scrape out the cancellous bone from the interior of the bone selected. The dense cortical bone is *not* to be included in the sample.
9. Each sample is put into a 1-ounce medicine vial having a screw cap. Enough cancellous bone should be taken to fill the bottle at least ⅔ full so that tests can be repeated when necessary.
10. The bottle should be sealed by means of non-porous adhesive tape, or by melted wax, to prevent the deterioration of the cancellous bone through the action of air. The identifying label should be distinct.

C. DATA. These should be available, but may be withheld until tests are completed.

1. Sex of each specimen.
2. Cranial index of each specimen.
3. Information as to racial connections and culture elements.

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CORRESPONDENCE

THE PERVERSION OF ARCHAEOLOGICAL DATA

With the public mind uninformed as to the true purposes of archaeology a dangerous situation is developing. Sporadic discoveries excite a certain morbid interest, and though the professional worker may seek to pursue his excavations quietly and without splurge, superficial interest is diverted into wild speculations as to values and antiquity. The newspapers, too, are quick to make the most of any discovery, whether by steam shovel or by museum worker.

Out of this interest and capitalizing it comes the faker, for where museums are active there is always the shrewd individual who seeks to make sensational discoveries, even though he has to plant them and later dig them up with witnesses. Any field worker knows how easily frauds or imported pieces can be inserted in the ground, to be found by himself or another worker and proclaimed as genuine finds. The patient crook may even salt a site and await the passing of the years before calling attention to his find. In Chautauqua County, New York, many years ago we saw one of these planted pits filled with engraved stones being weathered by the waste water from a well. We have seen what we believe to be "plants" even more recently. The great interest in archaeology in New York State, indeed, seems to be inducing the manufacture of frauds by shady dealers. The director of a certain large museum went into one of these shops recently and pointed out certain pieces he believed to be of recent manufacture. "They are fakes!" he said. "Oh, no!" came the reply, "we sell to the G. H. I. museum frequently. They buy these and say they are genuine." The director who happened to be from this very museum, then threw down his card and asked the salesman if he did not know the penalty of such deceit under the New York Dick law. The clerk paled and then blurted out, "Oh, well, we've got to make a living somehow."

That reply about answers the question as to why fraud manufacturers get into business. It will later serve to answer why certain persons heretofore under suspicion may later announce "grand discoveries" and either create new "relic parks" or seek to justify their former hoaxes. It would be quite easy, for example, in New York State, where the mammoth and mastodon once roamed, to obtain human skeletons and mammoth bones, bury them in muck or peat and sprinkle them with primitive tools. This is an example, conceived by "guess," from several probabilities but it indicates what may be done deliberately.

A second danger comes from misplaced specimens in collections. In examining one large museum collection numerous objects labeled as from one locality were plainly from some other. The specimens are thus practically valueless. A student without an adequate background might make utterly erroneous deductions from such specimens. In looking over many collections the writer has noted numerous instances of incorrect labeling. He has also discovered artifacts evidently stolen from known expeditions and usually correctly labeled

from the actual site. Such "errors and omissions" are detectable, but not so readily are specimens planted with intent to deceive.

As collections large or small have been formed, specimens are often lost. Housewives and widows sometimes dump entire collections over bay and river banks, throw them in old wells or in privy vaults. One of the writer's most frequent sources of Mexican objects, for example, is from Irondequoit bay, Monroe County, New York, the crumbling alluvial banks of which bury anything cast over them. Thus from beneath layers of sand, 25 feet down have come many kinds of "relics," fossils, coins and even modern weapons. Danish stone hatchet heads, Chinese coins, parts of the metal paraphernalia of fraternal orders, broken effigies from hitching posts and even a Polynesian carving in wood have come from the sands of the near-by bay or from the silt of streams. New York State seems to be the peculiar habitat of omnivorous collectors whose surviving relatives either throw away their hoardings, or leave them in crumbling cottages and camps. This situation is bound to become a growing one throughout the country as time goes on.

Then, there is the inspired, "got-it-by-hunch" enthusiast who starts out with a theory. "The Indians are from Moo," he declares. Straightway he seeks out collections having "Moo" specimens and "proves" his theory! Or, zealously, he seeks to prove that America was visited by Vikings. Every shred of evidence is gathered, even to implements that look Norse, though they may be of French or English manufacture and as late as 1700.

The pity of all this is that the public is not only deceived, but prejudiced against the honest archaeologist. This seems to be the case in the Northeastern area where much shoddy work is being done by persons seeking fame or profit. The hopeful note comes from a consideration of the work of a relatively small group whose reports form the real measure of advancement. It is this work that will endure while dishonest efforts will be catalogued with the Cardiff giant and the discredited Pompey stone.

ARTHUR C. PARKER

INACCURACIES IN FISCHEL'S FOLSOM ARTICLE

An article entitled: *Folsom and Yuma Culture Finds*, by Hans Fischel, in the January, 1939, issue of AMERICAN ANTIQUITY, interests the writer for a variety of reasons. Compilations of supposed facts concerning the discoveries of other persons should be carefully checked and rechecked by the compilers. Evidently that has not been done by the writer of the above named article.

Unlike some, the present writer is not omniscient, and cannot look down on the whole situation like Deity. He will only chop out the erratic knots relating to his own work, and leave the dead wood concerning the other writers involved for them to clean up. However, before passing, one exception will be made, but not because the writer believes that Dr. A. E. Jenks of Minnesota cannot take care of himself. In this passage one notes the manner in which the Folsom-Yuma type points found by Dr. Jenks are rejected and "omitted"

(p. 238). Personally, we believe that when Dr. Jenks evaluates either a cranium or an artifact, there is no one of superior qualifications capable of setting his opinions aside as of no value.

The incorrect citation of the names of authors in the bibliography may be either due to a careless preparation of the text, or only to a need for new eyeglasses. Examples of this are: On page 263, "E. W. Sellards" should be E. H. Sellards; on page 262, "C. W. Ray" is correctly C. N. Ray; on page 260, "H. B. Elrod" should be H. E. Elrod.

On page 262, in the bibliography, this line occurs: "92, 1932. Flint Cultures of Ancient Man in Texas. *Ibid.*, Bull. 4." The article named was really published two years later than that, in 1934 instead of 1932, and in Vol. 6 instead of in Vol. 4 as stated.

Well, to get down to the meat in the coconut, on page 239 a statement occurs which is credited to Ray, Bulletin of The Texas Archeological and Paleontological Society, Vol. 7, 1935, "Folsom points have been found as far as one hundred and fifty miles southwest of Abilene, Texas." This writer's correct statement, on page 121 of Vol. 7, was that Folsom Points had been found one hundred and fifty miles south*east* of Abilene. Only a little matter of several hundreds of miles of difference between the two places.

The writer believes that the quoted statement in a footnote on page 242: "There are manyfold indications for a very late survival of the mammoth into recent times" is manifestly too improbable for quotation in a scientific publication. He holds this opinion because all of the numerous bones of mammoths and mastodons which he has found in Texas were either deeply buried in geological strata or in gravels of the same type, from which erosion had removed the superimposed strata.

To think that Indian, or any other kind of folk-lore, would descend intact through so many millenniums is incredible, when according to their chief, the Comanche Indians now have no knowledge that they ever made flint arrowheads. When their chief, Baldwin Parker, was questioned by the writer a few years ago about flint arrowheads, he stated: "We never made them; we find them." It must not have been more than two or three hundred years ago when knowledge of the making of flint tools was a life-and-death matter to the Comanches. Therefore, linking up the mammoth, whose remains are normally found deep in geological deposits, with modern Indian folk-lore is personally far beyond belief.

On page 244 this passage occurs: " . . . the writer likes to point out the Brazos River Branch in North Central Texas, described by Sayles (1935), where projectile points have been found in combination with Folsom points under conditions strikingly similar to those at the Borax Lake site." When Sayles left Abilene in 1931, he had only one Folsom point, so far as the writer knows, and that was obtained from the farmer who owned the land on which this writer found a site containing Folsom points in 1929. (This site and the Folsom points were first inspected by Dr. A. E. Jenks in August, 1929.) At that

time this writer had a number of Folsom points which he had found in several different local sites. That Mr. Sayles had then, or later, personally found any Folsom points embedded with so-called "Brazos River Branch points," whatever the latter name might mean, this writer seriously doubts. Finding other kinds of points on old eroded surfaces together with Folsom points may mean something, as we have often pointed out, but is not conclusive evidence of their contemporaneity. All of the first crude Abilene points (Ray) found in the Gibson Site near Abilene[97] were found by this writer and were then first described and pictured in any archaeological literature, and he has reserved his right as their discoverer to retain his own names for them.

On page 245 of Fischel's article is a passage which reads as follows: "In the same category may belong the so-called Clearfork Type found near Henrietta, Texas, and described by Ray (1935), who claims that this stemmed point preceded the Folsom points at this site" (*Sic*). In reference to the above, this writer will point out the following facts concerning Texas archaeology for the benefit of the gentleman.

The Clear Fork Culture Complex is not a "so-called" such, but some of its components—the gouges—were first described and illustrated in archaeological literature by Ray in the Bulletin of the Texas Archeological and Paleontological Society, Vol. 1, 1929, p. 18, pl. 1, Lower Panel, Nos. 8–11. In the next issue of the same Bulletin, Vol. 2, 1930, pp. 45–47, pl. 10, No. 2, the Clear Fork gouge was then described, under a sub-head entitled "Limestone Encrusted Artifacts," as having been found in a site (McLean) with Folsom points. The same plate (No. 10, Vol. 2, 1930) shows a Clear Fork gouge and a side scraper, while the rest of the page shows Folsom and Yuma points, most of which were found by this writer in the McLean Site.

The name, "Clear Fork Culture Complex" (Ray) was first given to this culture in *Flint Cultures of Ancient Man in Texas*, Bulletin of The Texas Archeological and Paleontological Society, Vol. 6, 1934, pp. 110–111, pl. 18; not as Fischel alleges, in 1935. The gouges of this culture only became "so-called" something else ("Abilene Scrapers") in 1935 (E. B. Sayles, *An Archeological Survey of Texas*, Gila Pueblo).

The McLean Site and its peculiar artifacts (first described by Ray, 1930), as cited above, now takes on added importance because of the discovery by Ray, Bryan and Vaughan on July 4, 1938, of a nearly perfect Folsom point, over three inches long, embedded in alluvium beside a mammoth's bones and teeth (Ray-Bryan, Science, Sept. 16, 1938, pp. 257–258).

In reference to the passage quoted above, from page 245 of Fischel's article which alleges that Ray's finds were made near Henrietta, Texas, the writer has this to say: He never at any time has been at Henrietta, Texas, nor has he examined sites in that region. Mr. Adolph Witte is the man who wrote concerning the Henrietta sites.

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[97] Ray, Bulletin of the Texas Archeological and Paleontological Society, Vol. 2, 1930.

On page 245 of Fischel's article a passage occurs which states: " . . . and described by Ray (1935), who claims that this stemmed point preceded the Folsom points at this site." In the first place, Ray described the Clear Fork Culture long before 1935, as pointed out above. What this writer really wrote in the Bulletin of The Texas Archeological and Paleontological Society, Vol. 7, 1935, pp. 128–129, was: "From the finds here and elsewhere the writer takes no stock in the theory that stemmed and shouldered points were not used long before the Folsom points in America. Locally more evidence exists of their age than of Folsom points. In this site [the McLean Site, although not so named at that time] several broad-based, shouldered, broad, thick, roughly fractured points were found which also had central channels beginning below one shoulder and extending down the centers to near the points. Other similar points, not channelled, have been found deep in gravel deposits on other creeks near Abilene, and the writer has found them in the loose gravel below the Gibson site, where it is probable that they had eroded from those superimposed strata."

Fischel apparently assumes that there is only one site which contains all that the writer has found of ancient man's deeply buried artifacts, while in reality he has located a great many ancient sites, including several different Folsom sites near Abilene. However, by 1935, only one Folsom point had been found *in situ* (McLean Site, 1929). Also, a side scraper, later identified as of Folsom type, was found embedded eight feet deep in the same site in 1929.[98]

While the writer, as early as 1929, had found a Folsom Point *in situ* in the McLean Site, he had, as stated, found numerous other types of points embedded in gravels much deeper, and in what then seemed to be older formations. Developments of the past year (1938) have proved that the Folsom points from that site (McLean) are of Pleistocene age.

However, the geological evidence gathered in 1938 confirms the writer in the belief that the paleolithic-type Abilene points (Ray) found *in situ* in the Gibson Site, in 1930, belong to a much older period of the Pleistocene than that during which Folsom Man lived.

The latter part of Fischel's statement on page 245, which follows, is not true. "Conceivably some of the non-Folsom finds in America, reported to be early, might have preceded the Folsom-Yuma Complex. However, these paleolithic-like implements were not found *in situ* or in deposits where antiquity can be demonstrated." As a refutation of that statement, we refer the gentleman to Ray, Bulletin of The Texas Archeological and Paleontological Society, Vol. 2, 1930, pp. 50–52, pl. 11, Nos. 3 and 4, pl. 14, Nos. 3 and 5, where paleolithic-type Abilene points were described as they were found *in situ* 24½ feet deep; also, see pl. 15, same issue, for a picture of the site (Gibson). For Pleistocene evidences of the age of the site, see reports of Ray and Bryan, Bulletin of the Texas Archeological and Paleontological Society, Vol. 10, 1938, pp. 269–274.

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[98] Bulletin of the Texas Archeological and Paleontological Society, Vol. 2, 1930, pl. 10, Nos. 1 and 10.

On page 256 of Fischel's article are table sections for Abilene and Henrietta, Texas. The table section for Henrietta is totally incorrect; "Ray" has never visited Henrietta, nor has he written concerning its sites. Most of the statements concerning Abilene are also incorrect. Incorrect—"Points not found *in situ;*" Folsom and Abilene Points were found by Ray *in situ* in the McLean site in 1929, and the Gibson in 1930. Correct—"Geological evidence that man lived here during the Late Pleistocene (Leighton and Sayles, 1936)." Incorrect—"According to Shuler (1934) immediately post-glacial;" Dr. Shuler never has inspected these sites, and the reference given is to his 1934 article about sites at Dallas, Texas, which are situated two hundred miles distant. Incorrect—"Ray believes Folsom Points were made here until a few hundred years ago;" This error probably arose through correspondence in which we pointed out that most local Folsom sites seemed to be old, but that at one place Folsom points, pottery, manos, metates, and fine arrowheads were found together in the same surface site. However, we have always differentiated that Folsom site from the other Folsom sites of this region. For a correct description of the two kinds of sites, see Bulletin of The Texas Archeological and Paleontological Society, Vol. 7, 1935, pp. 84–86, in which is described the Pottery Site 17; in addition on pp. 127–129 there is a general description of the different local Folsom sites. In reference to the balance of that section of Fischel's report referring to so-termed "Brazos River Branch types" as being "in combination with" Folsom and Yuma blades, we doubt that E. B. Sayles, or anyone else, has found that many of these points under circumstances justifying any definite conclusions as to age, and the writer rejects that part as extremely doubtful.

This writer has nineteen Folsom points from Texas, of which seventeen were found near Abilene, two *in situ*. He also has an indeterminate number of Yuma points, some of which he hesitates to classify because of the apparent state of confusion as to what a Yuma point really is. He has seen many different types illustrated as Yuma points in the literature.

Examination of this writer's editorial statement on Folsom Sites, 1935 Bulletin, pp. 128–129, shows that he then wrote: "From the finds here [Abilene] and elsewhere the writer takes no stock in the theory that stemmed and shouldered points were not used long before the Folsom Points."

Long before 1935, the writer had found rough, broad, stemmed and shouldered points, deeply buried in creek banks and gravel pits, on three different creeks of this region, and in high terrace gravels at many other places, but at that time had found no Pleistocene animal bones embedded with them, nor with any other flint type, although he always had believed the sites to be of that age, because such bones had been found in other similar locations. In a few places the artifacts were on the surfaces of the same levels, and not far away. In addition, he had found the rough, thick, unstemmed paleolithic-type Abilene points[99] embedded 24½ feet deep in the Gibson Site, but had not then

[99] Ray: an entirely different point from that described by Sayles under the same name.

found embedded Folsom points very deep. Before that time, the Clear Fork narrow, twisted points, the broad-stemmed rough points, and Folsom points had been found in the same old, deeply gullied sites, but mostly lying on the surfaces of these eroded alluviums.

It has only been during the past summer (July, 1938) that the embedded animal-bone proofs of the Pleistocene age of both the local Folsom and Abilene points (Ray) have been found by anyone. Previously this writer, and also several Gila Pueblo geologists, had held that opinion, but definite proofs were lacking. In the gravel stratum of the Elm Creek Gibson Site, which overlies the stratum bearing Abilene points a little farther down the same creek, the writer, on July 3rd, 1938, showed Dr. Kirk Bryan and his assistant, Samuel Vaughan, Jr., an embedded *Elephas* leg bone (species unknown). This gravel stratum, a short distance down the creek, lies at a depth of 24 feet, and it there overlies three superimposed charcoal- and flint-bearing strata at depths of 24½, 27, and 30 feet in red clay. This Gibson Site is where the paleolithic forms known as Abilene points (Ray) were first found embedded in place, and were first pictured and described in our Bulletin.[100]

At another site, situated twenty-five miles distant from the Gibson Site, and known as the McLean Site, the writer has been collecting Folsom, Clear Fork, and broad-stemmed shouldered points since 1929. Previously most of these have come from the surfaces of old, deeply gullied alluviums. Here, on July 4th, 1938, the writer conducted Kirk Bryan and Vaughan to the skeleton of a mammoth, embedded in alluvium, from which the two teeth had been removed by Drs. E. H. Sellards, Otto O. Watts, and this writer in 1935.[101] On the edge of the hole where the teeth had been removed, on the same level as the teeth and bones, and within a few inches of where the teeth lay, we saw part of the base of a long Folsom point exposed by a recent heavy rain, embedded in the same hard alluvium. Mr. Vaughan then took a picture of the Folsom point in place.

These finds now show that local Folsom and Abilene points are Pleistocene in age, and that the Abilene points (Ray) probably are the older of the two types. This still leaves us with no stratigraphic proof of Pleistocene association for the Clear Fork Complex narrow, twisted, stemmed points; the broad-stemmed, shouldered, short, thick points; and several other types, which we have found so frequently under conditions, and in geological deposits, which might indicate age. However, it is true that in all of the old eroded sites where the writer has found either surface or embedded Folsom Points, he has also found all of the components of his Clear Fork Culture Complex.[102] He has also

[100] Ray. Bulletin of the Texas Archeological and Paleontological Society, Vol. 2, 1930.

[101] Bulletin of the Texas Archeological and Paleontological Society, Vol. 7, 1935, p. 128.

[102] For descriptions of this culture see Ray, Bulletin of the Texas Archeological and Paleontological Society Vol. 6, 1934 and Vol. 10, 1938.

found a number of Clear Fork Culture sites where no Folsom points have yet been found. He has been able to find the commonly accepted type of Yuma points in some of these sites, in addition to the five or six different types of projectile points which are most typical of Clear Fork sites.

After nearly twelve years of study of Clear Fork Culture sites, the question concerning their age relative to that of Folsom points is still not definitely determined. That the culture is very old has long been evident. Clear Fork sites are exposed by erosion either around the bases of mountains, along the high terraces of dry stream branches, along dry branches several miles below springs that are now weakly seeping, or in other situations which would not now afford water to sustain such large camps. A permanent water supply probably was there at about the close of the Pleistocene, and for a time during the early post-Pleistocene period.

In one instance the writer found a Clear Fork gouge on a gravel terrace lying in a gulley within a few feet of the three leg bones of a mammoth, but thus far, embedded evidence of such associations, conclusive enough to satisfy the writer, has not been found. The Clear Fork artifacts are not found on or very near to present uneroded soil surfaces.

The known facts might indicate: (1) a culture of a group of people contemporaneous with Folsom Man; (2) the culture may be a local cultural development of Folsom Man; (3) or, the flints were either immediately pre-Folsom or post-Folsom, and were let down by erosion onto the same level. The writer hopes to be able to investigate long enough to settle the matter of age conclusively.

He also hopes that, after he has found and published evidence to prove one of the possible solutions outlined above, or some better one, some compiler will not then publish that he definitely believes in an incorrect theory of those enumerated above.

CYRUS N. RAY
Abilene, Texas

NOTES AND NEWS

OBITUARY

Warren King Moorehead, known affectionately by scores of friends as the dean of American archaeology, died on January 5, 1939. In his passing, we have lost one of the pioneer figures in our field. During his lifetime of long and devoted service to American archaeology, he witnessed the accomplishments of the last decades of the 19th century and the advances of the first decades of the 20th century. American archaeologists have lost an experienced leader, a stimulating teacher, and a generous friend.

Although Mr. Moorehead was born in Siena, Italy, in 1866, his family home was in Ohio, where he attended high school and later went to Denison University. In the years that followed, academic recognition for his contributions to American archaeology and his services to the American Indian was accorded him when he received an honorary Master's degree from Dartmouth in 1901, and an honorary Doctor of Science degree from Oglethorpe University in 1927, and from his own Denison University in 1930. He served his apprenticeship in archaeology under Dr. Thomas Wilson of the Smithsonian Institution in the late 1880's. When Frederick Ward Putnam of Harvard made his plans for the Indian exhibits at the Chicago World's Fair of 1893, he chose Mr. Moorehead as one of his field staff. Between 1891 and 1893, Moorehead worked in the mounds of Ohio and made other collections in Utah, Colorado, and New Mexico for the Chicago Exposition. When that assignment was finished, he returned to Ohio and was connected for several years with the Ohio State Archaeological and Historical Society, in addition to devoting several years of private effort to the study of the interesting remains of this region. In 1901, he was called to Phillips Academy in Andover, Massachusetts, to serve as Curator of the newly-created Department of Archaeology. He was Director of the Department from 1907 until his retirement in 1938.

Mr. Moorehead's lasting monument is to be found in the pages of the many books and professional articles which he published. His name is linked with those of Putnam, Mills, and Fowke in establishing the scientific study of the archaeological treasures of Ohio. Although he had first-hand knowledge of archaeological sites in some thirty-two states, his chief interest lay in the Indian history of the eastern part of our country. He was a pioneer in the study of the archaeology of Maine, and was responsible for extensive excavations at Cahokia in East St. Louis, and at the Etowah Mounds in Georgia. His interest in problems of distribution caused him to organize and carry through surveys of the Merrimac, the Connecticut, the Susquehanna, the Arkansas, and the Illinois river valleys. He was always particularly interested in the manufacture, use, and variation of Indian stone implements and devoted the last years of his life to a careful analysis of this special field of American archaeology. His books upon this particular subject made him an authority upon it.

As a friend of the American Indian, Mr. Moorehead did not devote his energies solely to American archaeology. He was equally interested in the living

Indians and served them well as a member of the U.S. Board of Indian Commissioners for twenty-six years, during which time he gave much energy to investigating the conditions on Indian Reservations for the Department of the Interior, and to fighting for fair and honest treatment of these Indian communities.

Such a brief review of his accomplishments fails to furnish a proper estimate of the man whom his friends knew. Those of us who had the privilege of working with him during the last twenty years think of him as a delightful companion, an entirely fair-minded colleague, and a most generous friend. He will be long remembered for a host of kindly acts, both large and small, for which he never expected nor received adequate recognition. He numbered his friends by the hundreds among both professional and amateur archaeologists, and was known particularly for his sympathetic understanding of the problems of the latter. He had strong convictions concerning the methods and policies of work in American archaeology, and defended and worked incessantly for these. To him, the advancement of the study of American archaeology was a great and glorious game which he played with zest. Yet he never allowed differences of opinion to affect his personal relationships.

We have indeed lost a stimulating figure in American archaeology who has given us much, and who will not soon be forgotten.

CARL E. GUTHE
March, 1939

ARCTIC AREA

The Second International Congress of Anthropological and Ethnological Sciences, held in Copenhagen last August, provided an opportunity for several of the American workers to meet and discuss problems of Arctic research with their Danish colleagues, Doctors Gudmund Hatt, Therkel Mathiassen, Kaj Birket-Smith, Helge Larsen, and Erik Holtved. The notable success of the Congress was due in large measure to the foresight and efficient management of Dr. Birket-Smith, the Secretary-General. Among the thirty American and Canadian anthropologists present were Jenness, de Laguna, Rainey, Deric Nusbaum, and Collins. The following papers were read before the section on Arctic Ethnography, presided over by Dr. Therkel Mathiassen: "Eskimo and Tena Lamps and Cooking Pots" (de Laguna); "Prehistoric Culture Waves from Asia to America" (Jenness); "On the Origin and Relationships of the Old Bering Sea Culture" (Collins); "Archeological Investigations in the Thule District" (Holtved); "On the Problem of the Kurile Islands Culture" (Dr. Masao Oka, Tokio).

Dr. Froelich G. Rainey of the University of Alaska plans to do further work at Indian sites on the upper Tanana and Yukon Rivers, following which he will proceed to Point Hope on the Arctic Coast, where he will be joined by Mr. Helge Larsen of the Danish National Museum, Copenhagen. Excavations will be made at the extensive old Eskimo site at Point Hope which is being rapidly washed away by the sea. (*H.B.C.*)

NORTHEASTERN AREA

The following note is from Mr. John H. Bailey, Archaeologist of the Champlain Valley Archaeological Society.

"The Champlain Valley Archaeological Society partially excavated two sites of considerable interest in the summer of 1938. One of these was a rock shelter located near Chipman's Point on the Vermont shore of Lake Champlain a few miles south of Fort Ticonderoga. The place was important because of the depth of refuse, over six feet, and the apparent stratigraphy uncovered. Two distinct layers separated by about two feet of limestone rubble were found. The lower level contained the burials of a dog and a twelve year old child. From this refuse deposit were taken notched arrowpoints, a dagger-like bone implement, antler flaking tool, worked beaver incisors, but no pottery. Near the child's skeleton was a cache of moose bone chisels. The upper level produced potsherds, triangular arrowpoints, a bone awl, fishhook, harpoon, and bone bead. Nearby was an adult skeleton all the bones of which, with the exception of skull and lower jaw, had been broken and split and placed in a pile.

"The other site was on the Jesse Rivers farm at the junction of the Dead and Otter creeks a few miles from Vergennes, Vermont. It was a fairly large village site of an as yet unidentified culture. About one-third of the place was excavated and found to contain 39 refuse pits yielding three restorable pottery jars, hundreds of fragments of others, notched and triangular arrowpoints, scrapers, perforators, knives, bone awls, fishhooks, and arrowpoints. Four fragmentary human skeletons were taken from the pits. The society plans to continue excavation at this site during the summer of 1939."

Mr. Maurice Robbins, of Attleboro, Massachusetts contributes the following item: "A real step forward in the field of archaeology has been taken in the northeastern area in the organization in April of the Massachusetts Archaeological Society. In addition to the development and acceptance of a constitution the action of the Society at its first meeting includes the formation of various committes for the purpose of outlining and developing a program for its activities. Various projects under their respective committees are in a formative stage, they include a survey of the known sites in the State and the development of a bibliography which is both archaeological and historical. A 'Project Committee' is studying many other possible projects which may be included in a general plan of action. As an experiment the society is sponsoring an excavation on Nantucket Island under the leadership of Mr. Edward Brooks."

News has come from Mr. Donald A. Cadzow, Archaeologist of the Pennsylvania Historical Commission, that Dr. Mary Butler's report, *Three Indian Sites in Somerset County* has gone to press and that several works dealing with the archaeology of the northwestern part of the state are in preparation.

Dr. J. Alden Mason, of the University of Pennsylvania, is conducting an excavation in the Perkiomen Valley, near Philadelphia.

A chapter of the Pennsylvania Archaeological Society has been formed at Pittsburgh and will attempt to control vandalism in that area. (*W.A.R.*)

NORTHERN MISSISSIPPI AREA

The largest single cache of flint discs fashioned by prehistoric men ever found in America has been placed on exhibition in the hall of North American archaeology at Field Museum of Natural History. They come from the famous Hopewell Mounds of Ohio, and have been installed as nearly as possible in the same position in which they were left by the early Indian inhabitants of the region. (*Field Museum News.*)

GREAT PLAINS

A field party from the United States National Museum under the direction of Dr. Waldo R. Wedel, Assistant Curator, Division of Archaeology, expects to move into Kansas this June. Although there are a number of unsolved problems in the Kansas City area, the party will concentrate on areas farther west in the hope of opening up more intriguing problems. Plans call for two months intensive excavation in Scott County where Pueblo ruins were uncovered forty years ago. It is hoped that remains may be found which may be correlated with known Plains horizons in order to establish a chronological tie-up between dated Southwestern and undated Plains horizons which might be carried eastward toward the Missouri Valley. Hand in hand with this will go distributional and survey studies with human ecology in the foreground. Data are being gathered regarding the relation of archaeology to environment in the High Plains on the western border of primitive maize cultivation. Survey trips are planned to cover, if thinly, much of the western third of Kansas.

Mr. A. T. Hill in charge of a project of the Nebraska Historical Society excavating with W.P.A. labor near Wauneta, Nebraska, has secured evidences of permanent occupation of possibly quite late prehistoric or even protohistoric age. House sites have not been discovered and the pottery shows a rather curious mixture of types and traits—conical bottomed vessels with historic Pawnee type paddle marking plus some Dismal River elements. Mr. Hill is also working in hopes of cross-checking with Puebloan remains. Further plans call for excavation on Barnes Butte, an outlier resembling Signal Butte, near Oshkosh, Nebraska. Advance reports indicate the presence of a soil cap containing remains strongly suggestive of Signal Butte I and/or II. (*W.R.W.*)

PACIFIC COAST AREA

Dr. M. R. Harrington, The Southwest Museum, Los Angeles, has the following to say concerning the archaeological investigations of that institution:

"It looks now as if we may be able to check up on the distribution of Borax Lake types of implements in northern California, which is an important angle of our study of the Borax Lake phenomena.

"As for work accomplished so far this year, our Mr. E. F. Walker was able to excavate early this spring, a number of pre-contact burials and cremations on the Julius Fried ranch near Chatsworth, California. The skeletal remains were in bad condition, and the numerous stone bowls, pestles, and other articles were for the most part 'killed' by smashing to bits, but enough fragments were recovered to restore the greater part of them. Stone bowls of the truncated-cone type were especially numerous here."

President J. B. Lillard, of Sacramento Junior College, reports as follows concerning the archaeological work of his institution:

"The Sacramento Junior College Archaeological Field Party will not do any work this summer, but it has been engaged since April on a site 21 miles southeast of Sacramento, on the Cosumnes River. We will again work this site during the fall of 1939. So far, we have exposed 90 burials and all the indications are that it is Transitional. The Department of Anthropology of the Sacramento Junior College has in press Bulletin 2, by Lillard, Heizer, and Fenenga. But the sites studied in this Bulletin do not include the one mentioned above."

Dr. L. S. Cressman writes concerning the work of the University of Oregon:

"We have been engaged this winter in working up reports on the material excavated last summer. Three papers have been prepared and will be published in the University of Oregon Publications in Anthropology: a general paper by myself presenting the general description of our problem; a joint paper by Krieger and myself on the atlatls; and a joint paper by Dr. Howell Williams and myself on the stratified sites in south-central Oregon. These are now in the hands of the editor and should be published in the near future.

"The Department of Anthropology and the Museum have had a number of student field parties under the direction of Mr. Krieger on mounds in the Willamette Valley and on certain shell mounds and house sites at the mouth of the Coquille River. Very little in the way of artifacts has been secured from the former group; the skeletal material is poorly preserved. Interesting bone artifacts were collected at the Coquille site. It is possible that northwestern California influences may have been effective this far north.

"This summer we are taking a party of ten students into the field to continue excavation of caves in the Summer Lake region near Paisley and farther east in Warner Valley. The second part of the field season will be spent on reconnaissance and excavation in the area east of Steens Mountain in the Northern Basin and the divide leading into the exterior drainage by way of the Owyhee. It is hoped that we may be able to establish cultural sequences in this area down to historic cultures." (*E.W.G.*)

During the spring months San Diego Museum field parties were active in recording petroglyphs and making sherd collections in the lower basin of the Colorado River in order to procure data for future publications on the respective subjects of early Yuman ceramics and petroglypic art.

No field work is planned for the summer but in the fall the field staff will continue its archaeologic survey work in Lower California. (*Malcolm J. Rogers.*)

SOUTHWESTERN AREA

During the past winter the Department of Anthropology at the University of Arizona has continued its anthropological research on the Papago Indian Reservation west of Tucson which was begun last year. In addition to the current racial studies by Mr. Norman E. Gabel and linguistic studies by Mr. William Kurath, archaeological investigations were conducted over a period of

five months. The work was made possible through a fund allotment from CCC-ID with Mr. F. H. Scantling, a graduate student of the University of Arizona acting as field director. Three sites were selected for investigation; 1, a guano cave, 2, a fourteenth century site, and 3, a site dating apparently from the ninth century and later. Very little has been done in Papagueria along archaeological lines and for that reason these investigations are yielding needed information to clarify the prehistory of this vast area. The early indications are that the local sequence will not parallel either that of the Tucson area or the Gila Basin.

Dr. Byron Cummings, Director-Emeritus of the Arizona State Museum, has for the ninth season resumed his study at Kinishba, Fort Apache Indian Reservation. Along with further excavation and restoration of this ancient pueblo, a new museum building is being erected at the site where the material culture of Kinishba will be exhibited.

Dr. Bronislaw Malinowski, on leave of absence from the University of London, conducted a series of seminars jointly sponsored by the Departments of Anthropology and Psychology of the University of Arizona. These highly instructive seminars dealt principally with aspects of social anthropology. Dr. Malinowski has spent most of the winter in Tucson, resting and writing.

Summer excavations by the Arizona State Museum will be confined to a site of the Mogollon culture situated on Forestdale Creek on the Fort Apache Indian Reservation south of Showlow, Arizona.

Word has just been received that the Peabody Museum of Harvard is resuming its extended archaeological studies at Awatovi and adjacent area. In addition to final testing and checking of details on Awatovi itself, the expedition expects to examine a number of small early sites in order to clarify the sequence of cultures leading up to the time of Awatovi. (*E.W.H.*)

The Museum of Northern Arizona has had direction during the spring quarter of the supervision of an archaeological expedition financed by W.P.A. funds at the Ridge Ruin, a prehistoric site lying 18 miles east of Flagstaff and 2 miles east of Winona Station on the Santa Fe Railroad. The site consists of a medium sized pueblo, large trash mounds and two ball courts. The ball courts do not belong to the pueblo but are associated with pit house sites nearby. Following the excavation of Winona Village last fall, in which 16 pit houses were completely excavated, the excavation of Ridge Ruin will throw considerable light on the history immediately following Winona. Both sites are proving very rich in artifacts. (*H. S. Colton.*)

During the month of August (July 29 to August 26) the University of New Mexico will conduct its annual Field Schools in the Jemez and Chaco Canyons of New Mexico. The beginning Field School in archaeologic techniques will be held in the Jemez Canyon, under the direction of Dr. Homer G. Barnett, of the University of New Mexico. The excavation work will be supervised by Mr. Paul Reiter of the University of New Mexico. There also will be several visiting lecturers in Ethnology, Natural History, and other fields.

The advanced field school for work in Archaeology and Ethnography will be held in the Chaco Canyon, under the direction of Dr. Leslie Spier. The Chaco excavations will be supervised by Mr. Frank Setzler, curator of Anthropology of the United States National Museum, assisted by Mr. J. Charles Kelley and Mr. Donovan Senter. Field Museum work will be conducted by Dr. Florence Hawley. Other members of the staff include Dr. Ernst Antevs, Paleoclimatologist, Dr. Stuart Northrop, geologist, and Dr. E. F. Castetter, botanist. Work in the Chaco Canyon will stress excavation and museum techniques, interpretation of soil profiles, and ethnographic methods.

A small group of graduate students will be taken by Dr. Donald D. Brand, Head of the Anthropology Department, to carry on archival research in Mexico City and field reconnaissance in the Mexican states of Guerrero and Michoacan. This party will be in the field for about three months commencing about the first of June. (*D. D. Brand.*)

The annual Chaco Conference will be held at the University of New Mexico's Chaco Headquarters August 26 to 28. All professional Anthropologists are cordially invited to attend. Board and lodging will be provided free of charge to active professional anthropologists (be sure to bring your bedding). (*D. D. Brand.*)

Prehistoric ruins near the town of Glenwood, New Mexico, will be excavated this summer by an expedition from Field Museum of Natural History under the direction of Dr. Paul S. Martin, chief curator of the museum's department of anthropology. The studies and excavations of the present summer, intended to supplement those of previous seasons, will be concentrated on an investigation of the Mogollon culture. (*Field Museum News.*)

SOUTH AMERICAN AREA

Dr. Antonio Serrano has recently published (Revista del Instituto de Antropología, Tucumán, 1938) a report of his original work on the shell heaps (*Sambaquis*) of the east coat of Brazil. At the same time he has included a rather thorough analysis of the extensive, although not readily accessible, literature on this subject.

Dr. Rafael Larco Hoyle has done more careful excavating on the North Coast of Peru than any other individual. Not only is his collection of Early Chimu ceramics the finest in the world, but he also has excellent plans, descriptions, and photographs of excavations and ruins. His first published volume on this work appeared at the end of last year ("*Los Mochicas*," Casa Editora La Cronica, Lima 1938) including description and plans of the important but still little known ruins of Nepeña, Queneto and Cupisnique, as well as illustrations of Chavin coast ceramics and Early Chimu specimens.

Attention of Americanists should be called to the excellent bibliographical work on South American anthropological publications being carried on by Dr. Federico Schwab of the University of San Marcos in Lima, Peru. Well annotated bibliography appears yearly in the Boletín Bibliográfico of San Marcos, as well as in separates. (*W.C.B.*)

BOOK REVIEWS

A Report of the Susquehanna River Expedition. Sponsored in 1916 by the Museum of the American Indian, Heye Foundation, WARREN KING MOOREHEAD, and others. (Andover: The Andover Press, 1938. 142 pp., 37 plates, 22 figs., map. $2.45.)

This report is a running account or diary of one season's survey along the Susquehanna River from its source in Lake Otsego, New York, through Pennsylvania to its mouth in Maryland. The narrative is interrupted with descriptions of two large collections inspected, a "Classification of Aboriginal Cultures," ethnological notes on the Andaste, notes on the excavation of the Murray Farm cemetery, and a two-page extract concerning historical sites along the Susquehanna. Brief accounts of exploratory sampling of some other sites appear as a part of the diary. The Maryland part of the survey, made and reported upon by Mr. William B. Marye, indicates the location of shell-heaps on Chesapeake Bay and includes an excellent discussion of petroglyphs in the lower reaches of the Susquehanna.

There is much information of value scattered through the report, and the plates are good to excellent. However, to the archaeologist looking for definite information as to complexes found at particular sites, an adequate description of pottery types, or evidence of temporal sequence, it will be a disappointment.

The chapter dealing with the classification of aboriginal cultures confines the cultural identification to twenty-seven sites in New York State only (most of which are not mentioned elsewhere in the report) and does not touch upon those in Pennsylvania or Maryland. "The classification of aboriginal cultures . . . is, for the most part, based upon presumptive evidence," but none of that evidence is to be found in the report. Although the new cultural terminology advanced by Parker and Ritchie for New York is used in this section, throughout the rest of the book the terms Iroquois, Andaste, and Algonkin alone appear.

A claim is made for having " . . . established a definite sequence of prehistoric material cultures on analogy with the findings in the Finger Lake region of Western New York," but no single instance of such evidence appears in the text. The writer gathered, perhaps erroneously, that the archaeological materials found by this expedition corresponded with the material found by Parker and Ritchie, on a later expedition, and that the same cultural sequences were assumed directly from these sources without any additional testimony from stratified sites examined or accurate analyses of components.

Sites in some instances are called Andaste without indicating the evidence for the identification of the archaeological with the historical unit. This seems to have been done on the basis of two observations, viz.: (1) this tribe occupied the general area during a part of the historic period, and (2) the pottery, pipes, triangular arrowheads, and some other artifacts found on the sites in question are "Iroquoian." The reviewer may be unduly critical. Nevertheless, it seems

to him that the identification of an historical Indian village with an archaeological site should be supported by actual evidence or the exact reference where competent evidence can be found. Whether or not it is true that the sites termed Andaste are actually those once occupied by these people is beside the question. The archaeologist who proposes such an identification should feel himself under obligation to his fellow workers in other areas who are less familiar than he with local history, to present the evidence upholding his conclusions.

The foregoing criticisms might well be summed up as follows: The report indicates a large amount of valuable archaeological data gathered, recorded, and available for study; but presents, aside from the field account and notes, chiefly vague conclusions stripped of tangible substantiating evidence. Notwithstanding the hiatuses in it, no archaeologist working in the area can afford to miss consulting the work.

Contributors to the volume are the late Dr. Warren K. Moorehead, Director of the Expedition, Roland B. Hill, George P. Donehoo, the late Alanson B. Skinner, Thomas B. Stewart, and William B. Marye.

THORNE DEUEL
Illinois State Museum
Springfield, Illinois

The Younge Site: An Archaeological Record from Michigan. EMERSON F. GREENMAN. (Occasional Contributions, Museum of Anthropology, University of Michigan, No. 6. 172 pp., 33 plates, 9 text figures, 10 maps. Ann Arbor: University of Michigan Press, July, 1937. $2.25.)

This, the sixth number of the Occasional Contributions from the Museum of Anthropology, is the most pretentious so far released. It deals with a site excavated by Greenman located in Lapeer County, Michigan, north of Imlay City in the Lake Huron drainage basin. Dr. W. B. Hinsdale conducted three days preliminary exploration during 1934 after the site had been discovered by Mr. Carman Baggerly and reported to the Museum by Dr. C. M. Braidwood.

During the preliminary work human remains were found bearing perforations similar to those in crania previously found at Farmington and Flat Rock, Michigan. As indicated in a previous publication, of which Hinsdale and Greenman are co-authors,[103] perforated crania constitute a trait diagnostic of a culture complex of rather limited geographical extent having eastern Michigan and western Ontario as a center. In view of the importance of this complex and the promise held forth by the Younge Site, looking toward at least a partial solution of the phenomenon, the location was wisely chosen as the scene of intensive exploration during 1935.

The site was characterized by an abundance of post molds most, of which served to outline two large rectangular enclosures and a third, much smaller

[103] *Perforated Indian Crania in Michigan:* Occasional Contributions, Museum of Anthropology, University of Michigan, No. 5.

and oval in outline, some distance from the other two. In view of the complexity of detail in connection with these post mold patterns a scale drawing somewhat larger than either Maps 3 and 4 would have been desirable. In this same connection it would have been of material advantage if Map 2 had indicated the location and extent of the area within the site which was intensively explored. Map 4, showing the east and west ends of Enclosure 1, indicates that some parts of the area within the enclosure was not excavated. It is not clear, from the text, why any part of the site obviously containing archaeological material should have been thus neglected. That this unexcavated area did theoretically contain material which would have further enhanced the report is suggested on p. 59 when Greenman states that: "The number of sherds is small, perhaps only half or a third as large as it would have been if Enclosure 1 had been excavated completely from one end to the other." There were undoubtedly extenuating circumstances which account for this exclusion and a qualifying statement would have been advisable.

The chapter describing the burials, with accompanying tables, is complete and satisfying. Besides indicating the peculiarities manifest by this particular culture complex, some of which are certainly diagnostic, one is impressed with the extreme variation in burial types within one small group. The fact that Greenman found, out of fifty-seven burials the following types, "extended, flexed, bundled, torso, cremated, fragmentary, and single unassociated crania" should serve as a warning that burial type alone, without good accompanying material traits, is an extremely poor indicator of cultural affinity.

The pottery from the site is described in a chapter devoted to artifacts. The fact that the description of individual sherds and design elements is laborious and unsatisfactory does not reflect discredit upon Greenman but rather upon the absence of adequate standardization of terminology for this class of artifact. Without the illustrations, which are well executed, one would be hard put to it to identify or compare the sherd materials from the site. A minimum of artifacts other than those of clay is well taken care of in the same section of the report.

An admirable attempt is made in the conclusions to explain the peculiarities of the site by historical documents. Practically all such data available have been searched to account for the enclosures, perforation of human bones, and an attempt on the part of the Indians to re-articulate bones devoid of flesh during some burial ceremony. In using this material Greenman has certainly not been dogmatic and readily admits the lack of conformity between historical description and actual findings in many instances. That the available material was used in an attempt "to point out the main directions in which final interpretation must proceed" is indicated in the foreword and as such should form the theme of any well organized archaeological report.

The author's conclusion that the pottery from the Younge Site is a mixture of Woodlands and Upper Mississippi is beyond question but the direct comparison of the site with the Owasco Aspect of New York is subject to debate. The

grouping of the subject site with another, near Mount Clemens, Michigan, excavated in 1936 but not yet reported upon, is probably justified by the presence of certain diagnostic traits at both sites. However, the insertion of the two components into the taxonomic classification as the "Younge focus, of the Owasco Aspect of the Woodlands Phase" is premature and not strictly in accord with the classification as it is now tentatively established. Owasco is an aspect of the Northeastern Phase of the Woodlands Pattern and any affinity the Younge Focus may have with Owasco would not justify using the term Woodlands to designate the phase instead of the pattern. The reviewer has a feeling that in using the term "Woodlands Phase" Greenman has been the victim of a slip of the pen, a misfortune which occasionally befalls every author. He has certainly succeeded in pointing the way and it is to be hoped that institutions within the area producing diagnostic materials will follow the lead and contribute data equalling in merit that contained in this report. The author and the Museum of Anthropology deserve the thanks of all students of this area.

Appendix A is a monumental work by Frederick A. Matson, Jr., detailing the physical characteristics of the pottery from the site. The results of his work are interesting, valuable, and add materially to the report as a whole. As with all pioneers, in any field, he is distinctly handicapped by the almost total absence of similar factual data for this area. His contribution should encourage others to collect the materials necessary for such a study making possible assembly of much needed data for comparative purposes. This is a new approach for the "Mound Area" and its possibilities should not be overlooked by any field worker.

The reviewer regrets that he is not qualified to review the work of Byron O. Hughes in Appendix B. The text and tables bear witness to a tremendous amount of labor. It would seem that Hughes, like Matson, was impeded by a paucity of comparative data.

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Archaeological Investigations in Nine Mile Canyon, Utah. JOHN GILLIN. (University of Utah Bulletin 28, No. 11, pp. 1–48, Salt Lake City, Utah, 1938.)

This valuable paper adds important data on an area in northeastern Utah about which little had previously been published. Three types of sites in chronological sequence are distinguished by house construction: slab-houses, low adobe-walled houses, masonry houses. Pottery and other minor antiquities seem to be little differentiated by sites.

The author postulates three periods of prehistoric occupation of the area: Basket Maker, Pueblo with many Basket Maker traits, and nomadic peoples. The first is based upon petroglyphs and upon Scott's and Morss's earlier finds. Although the area was doubtless occupied by contemporaries of the classical Basket Maker, the evidence is insufficient to define their culture and does not, it seems to me, warrant their classification as true Basket Maker.

Dr. Gillin suggests that his slab-houses came from the San Juan area, a plausible hypothesis. In view of these houses, I now incline to believe that the jacal-like pit houses of the earliest phase of the Basket Maker-Pueblo culture of several parts of the Northern Periphery may also have been derived from such slab-houses (the slabs being omitted in regions where they were not available) rather than from southwestern Colorado Pueblo I jacal lodges, as I previously suggested.

The presence of corrugated and black-on-gray pottery in these slab-houses pushes the antiquity of these wares in the Northern Periphery back to the earliest phase of the Basket Maker-Pueblo culture and likewise points to greater recency of this phase than had formerly seemed apparent.

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Excavations at La Mata, Maracay, Venezuela. W. C. BENNETT. (Anthropological Papers of the American Museum of Natural History, Vol. 36, pp. 69–137, New York, 1937.)

This study presents the results of a few weeks spent in excavating the mound known as La Mata, one of a group of some forty artificial mounds situated on the shores of Lake Valencia. The site seems to have been occupied first by a group living in pile-dwellings, later by mound dwellers who were probably descendants of the earlier population (the level of the lake having fallen in the course of time). In the bottom section of the mound a gray pottery predominates while the upper section yields a new type of red-yellow ware, though the old gray ware persists substantially unchanged in type.

Fifty-seven burials were encountered, chiefly in the upper levels. These were variable in type, consisting of about equal numbers of secondary urn and primary direct burials, with a few of the secondary direct type. Artificially deformed skulls of the "Aymara" type are commonest in the secondary urn burials, which seem to be older than the primary direct interments. Grave furniture was disappointingly rare. Miscellaneous finds included figurines, amulets, comal platters, shell and stone objects. Taken as a whole the material resembles that of the surface collections described by Nomland from near the shores of the Gulf of Venezuela (American Anthropologist, Vol. 35; Ibero-Americana, No. 11). Dr. Bennett is to be congratulated on presenting the results of what is, I believe, the first carefully conducted stratigraphic excavation in this part of South America. As such his work gives us a valuable point of reference for future studies.

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